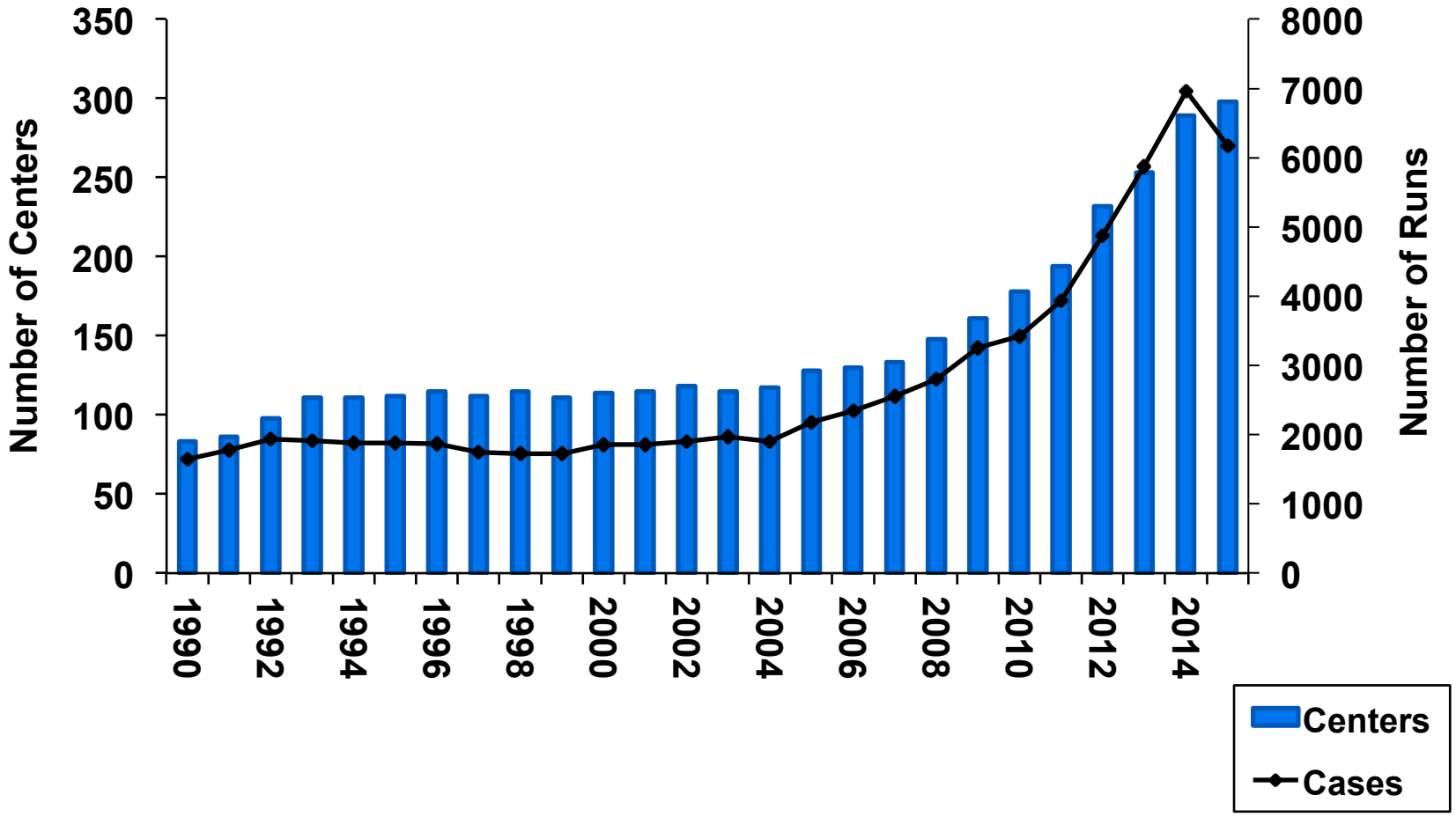
ELSO Registry Data Summary

January 2016

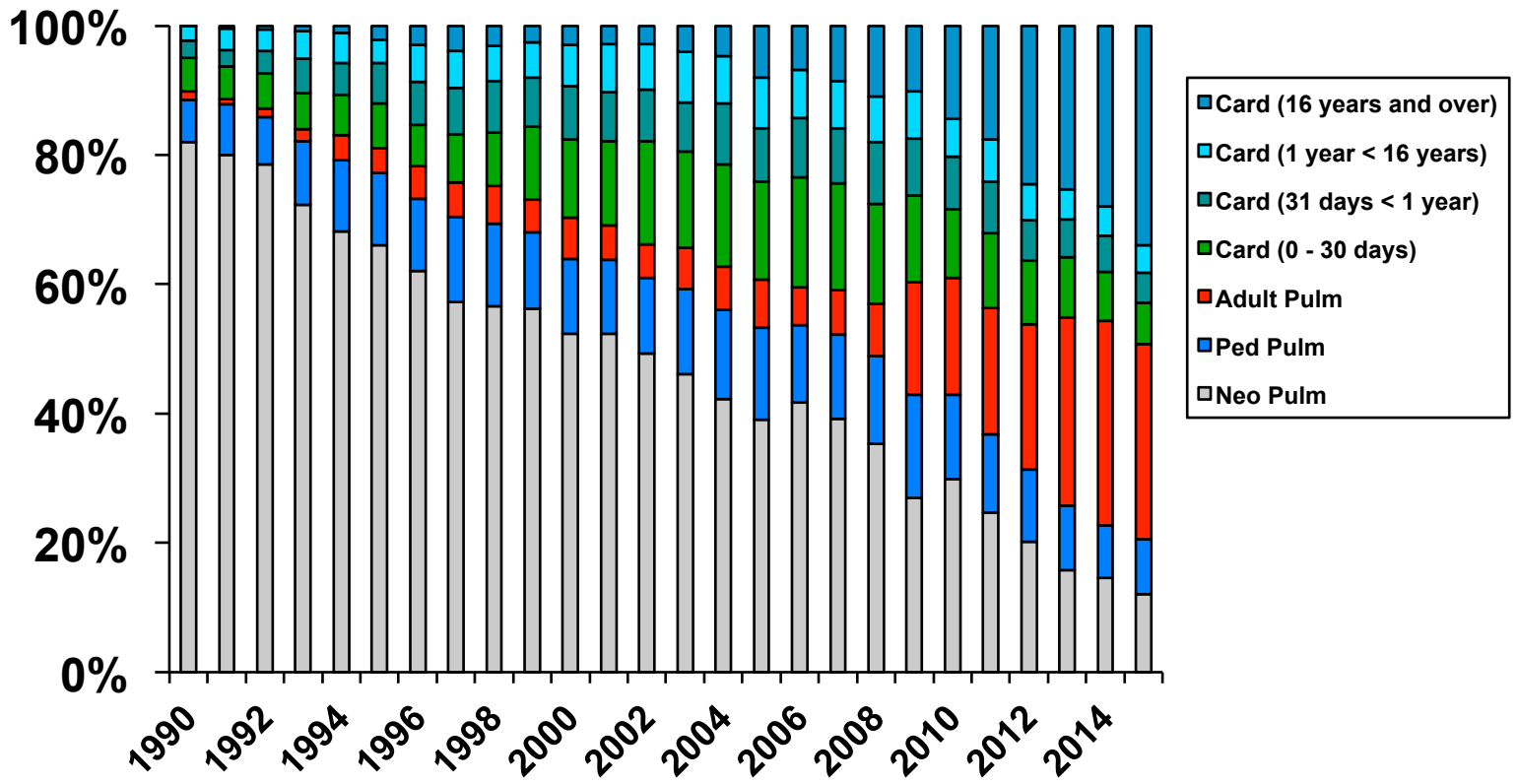
Active ECLS Centers



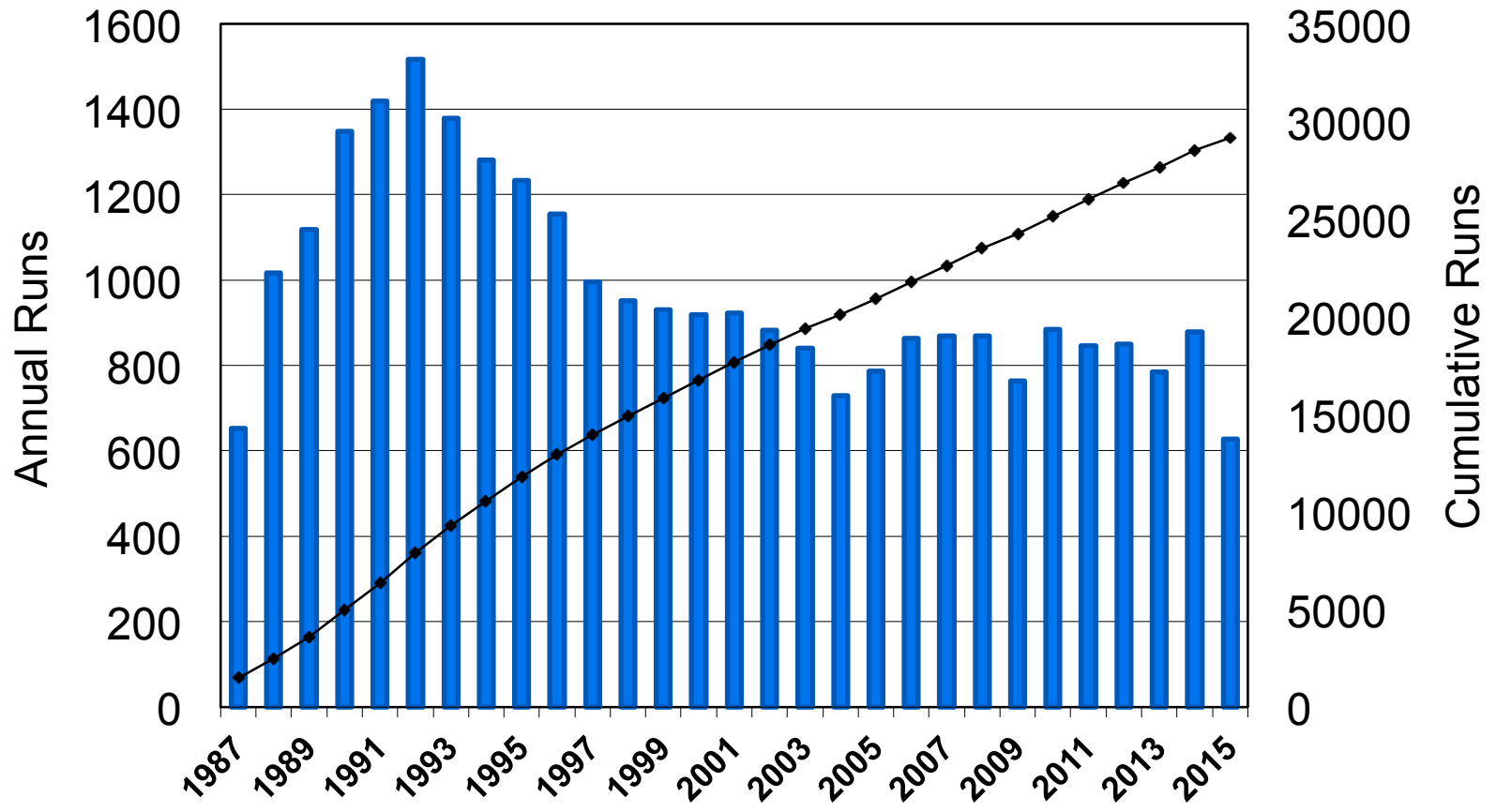
Overall Patient Outcomes

	Total	Surv ECLS		Surv to DC	
Neonatal					
Respiratory	28,723	24,155	84%	21,274	74%
Cardiac	6,269	3,885	62%	2,599	41%
ECPR	1,254	806	64%	514	41%
Pediatric					
Respiratory	7,210	4,787	66%	4,155	58%
Cardiac	8,021	5,341	67%	4,067	51%
ECPR	2,788	1,532	55%	1,144	41%
Adult					
Respiratory	9,102	5,989	66%	5,254	58%
Cardiac	7,850	4,394	56%	3,233	41%
ECPR	2,379	948	40%	707	30%
Total	73,596	51,837	70%	42,947	58%

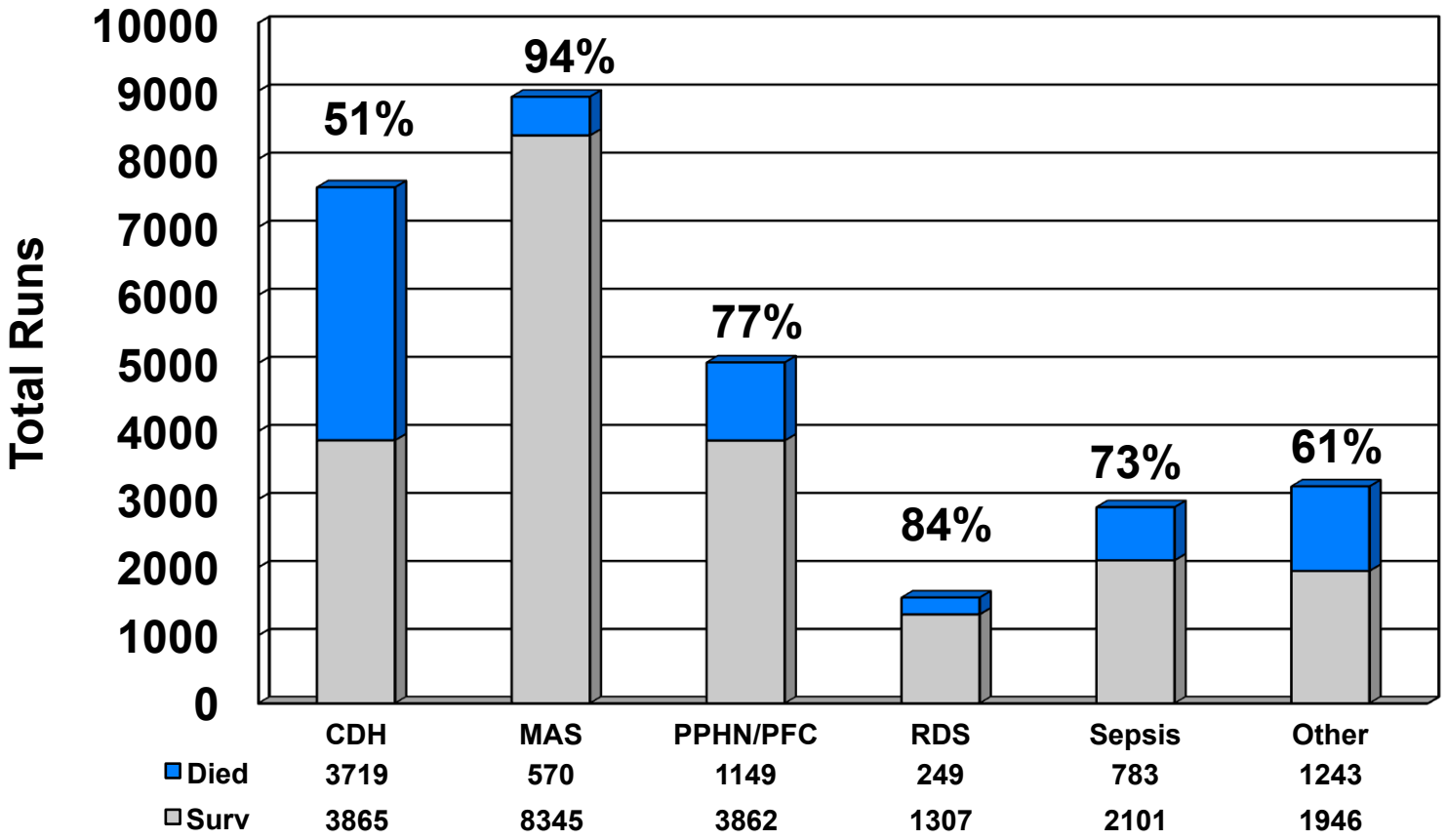
Runs by Year


100%
80%
60%
40%
20%
0%
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Card (16 years and over)
Card (1 year < 16 years)
Card (31 days < 1 year)
Card (0 - 30 days)
Adult Pulm
Ped Pulm
Neo Pulm

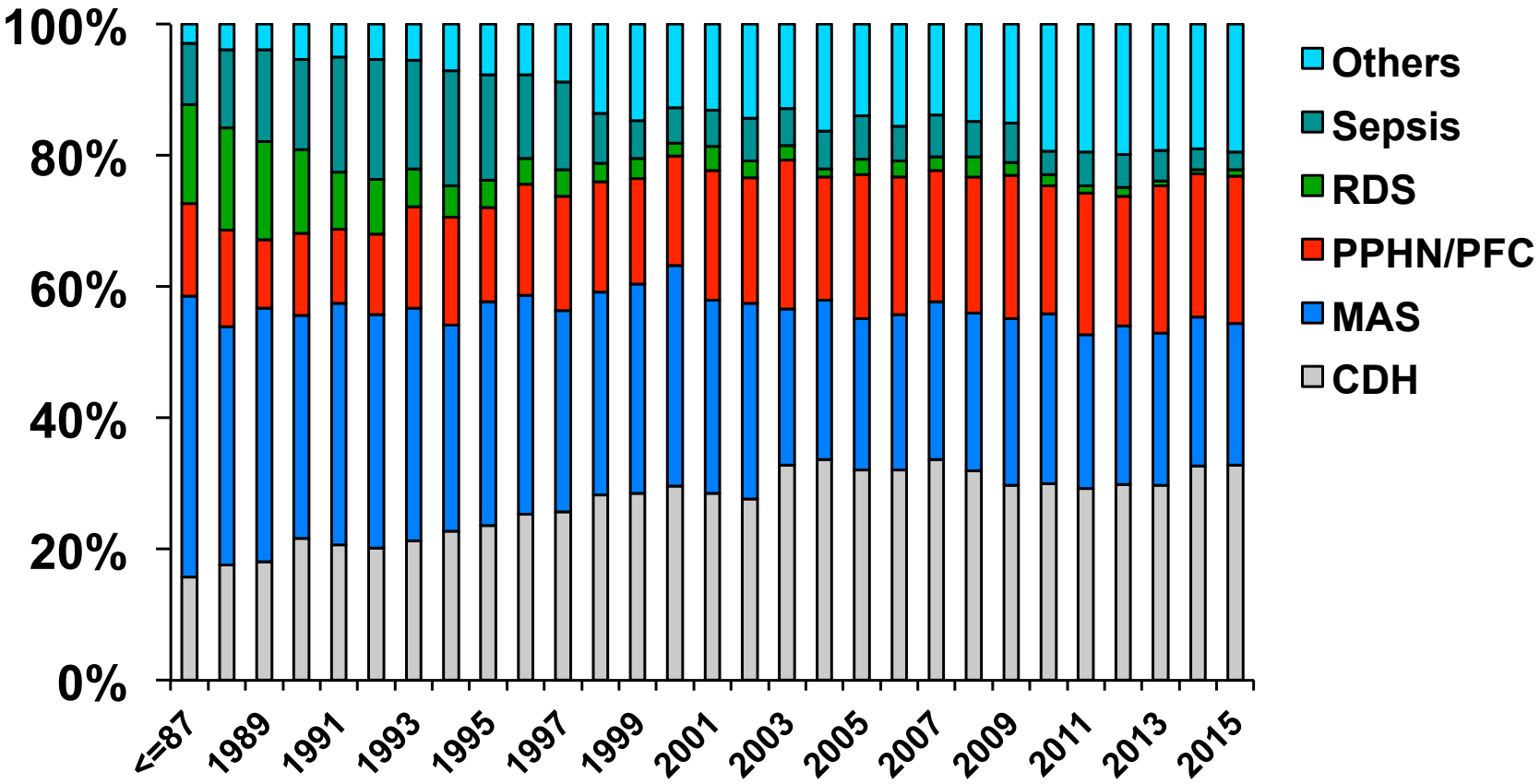
Neonatal Respiratory Cases



Neonatal Diagnoses and Survival



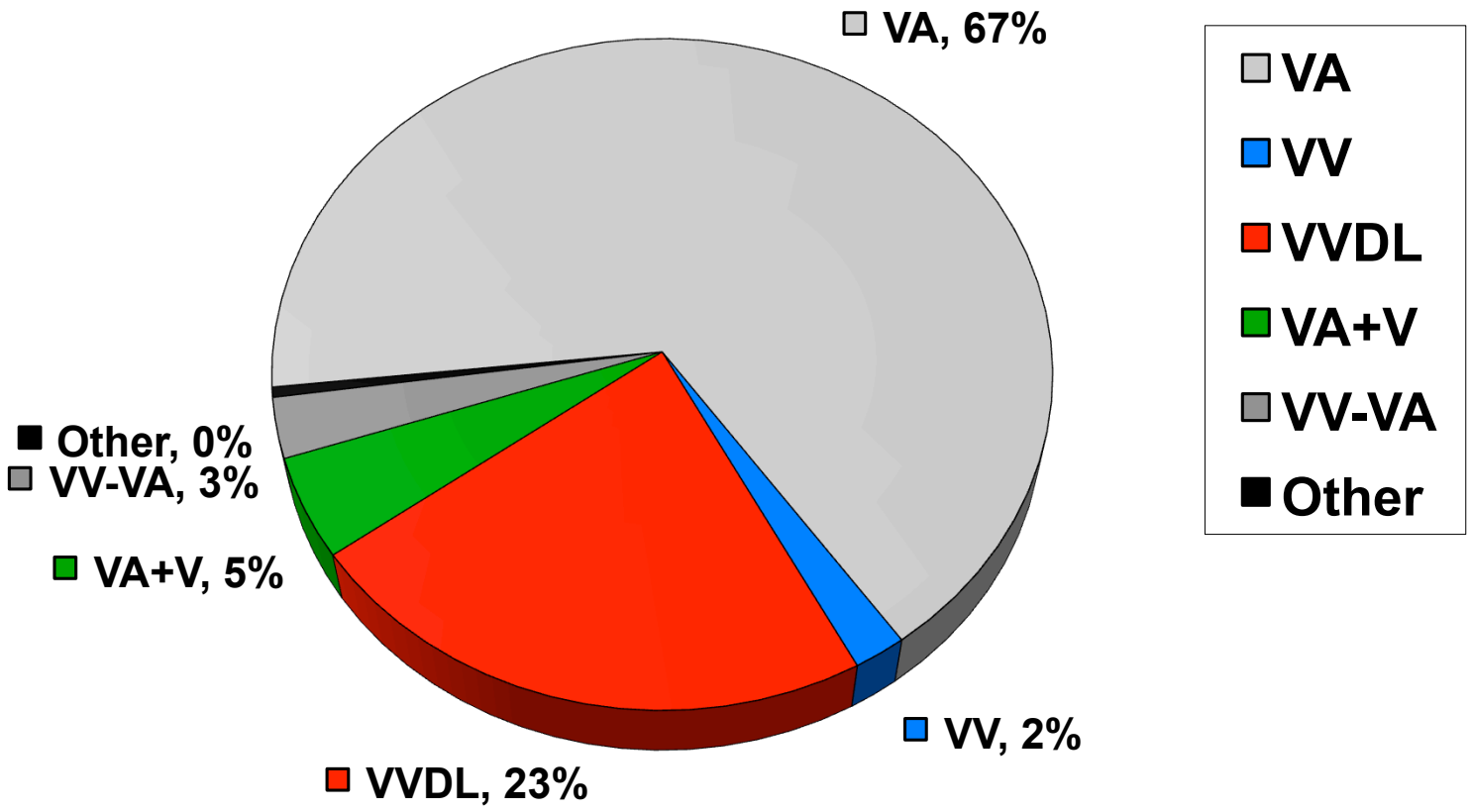
Neonatal Cases by Year and Diagnosis



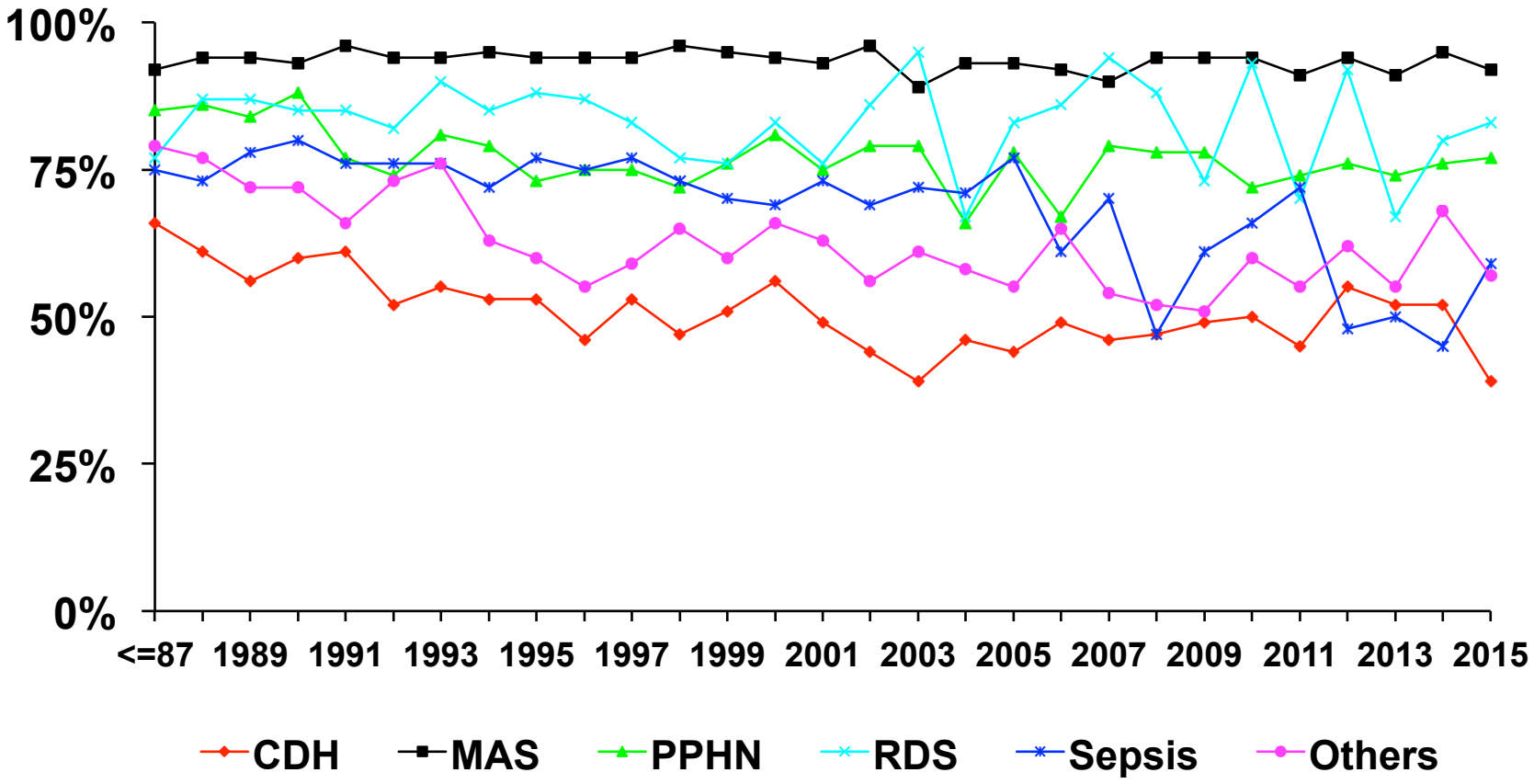
Neonatal Cases by Diagnosis

	No. Runs	*% Survived*
MAS	8,915	94
CDH	7,584	51
Sepsis	2,884	73
PFC/PPHN	5,011	77
RDS	1,556	84
Other	3,189	61

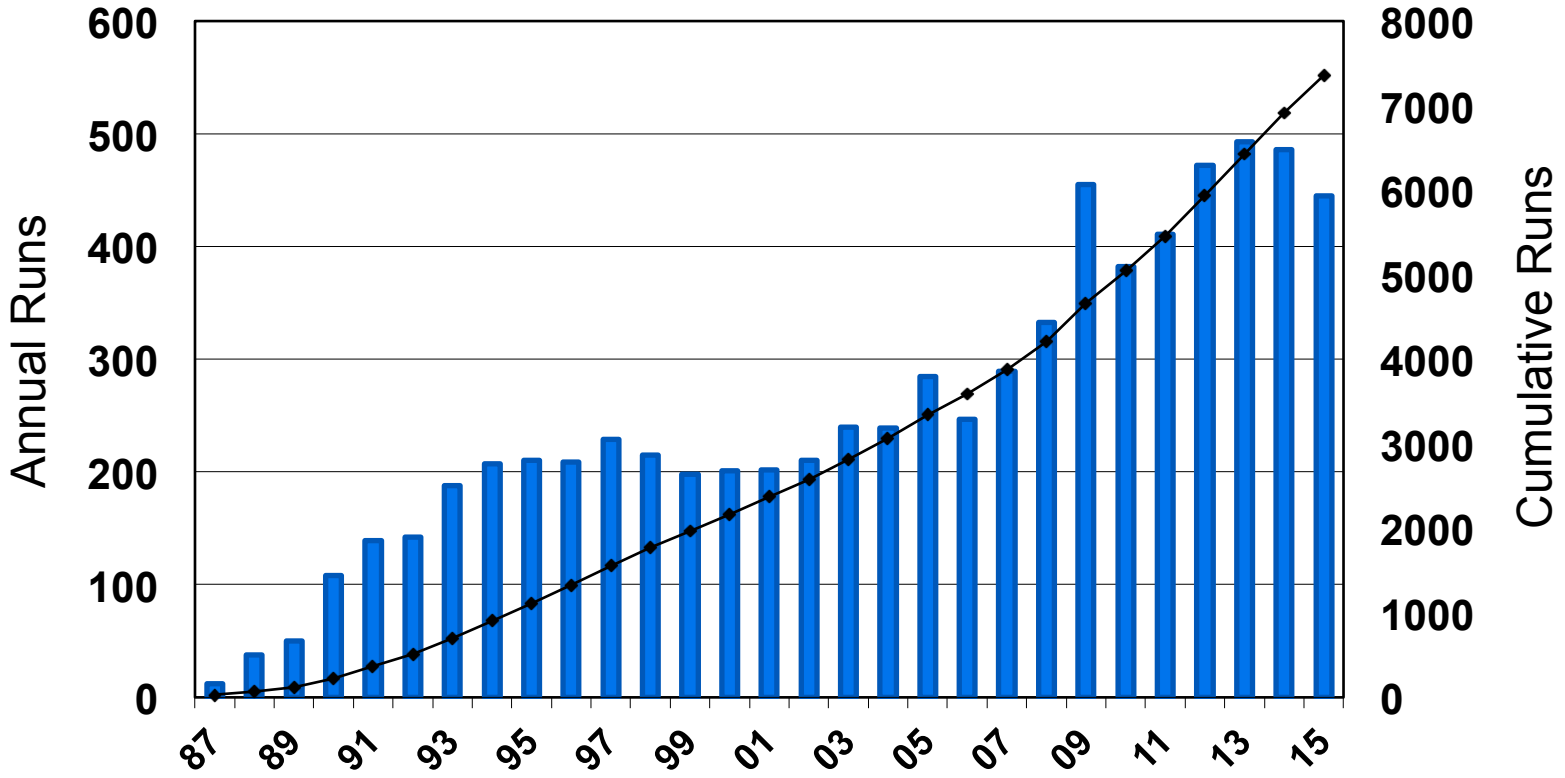
Initial Mode of Neonatal Respiratory Support



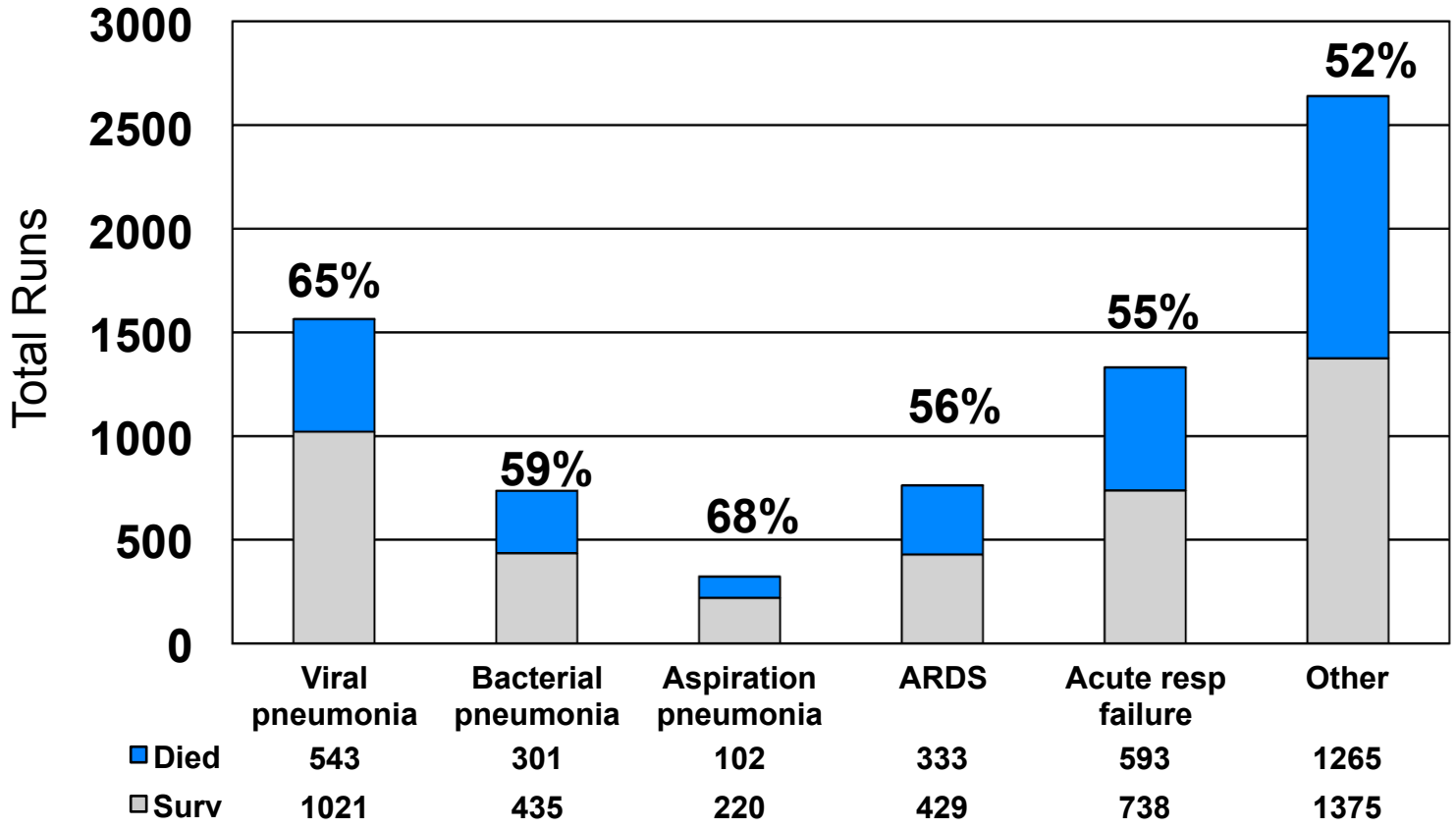
Neonatal Survival by Diagnosis and Year



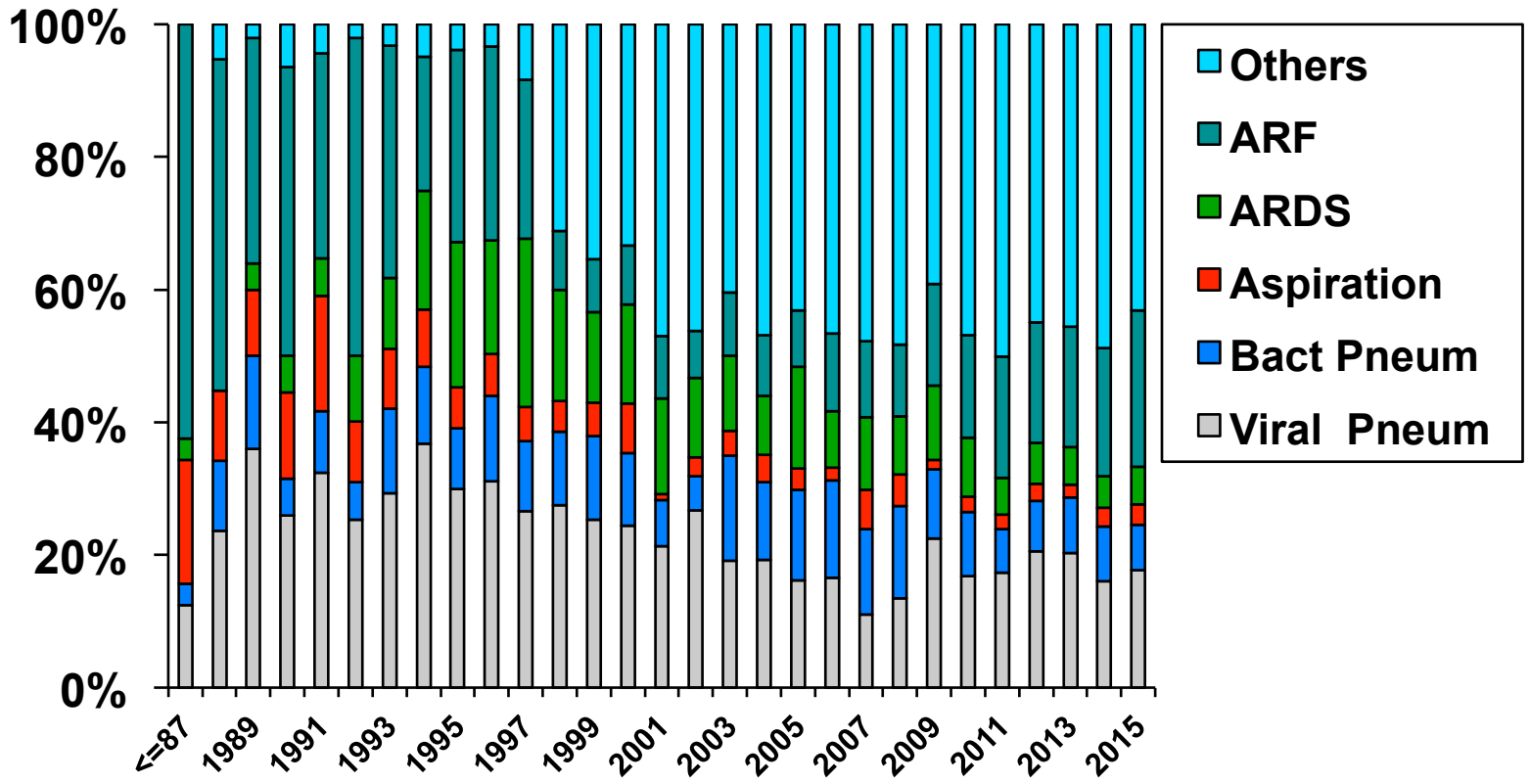
Pediatric Respiratory Cases



Pediatric Diagnoses and Survival



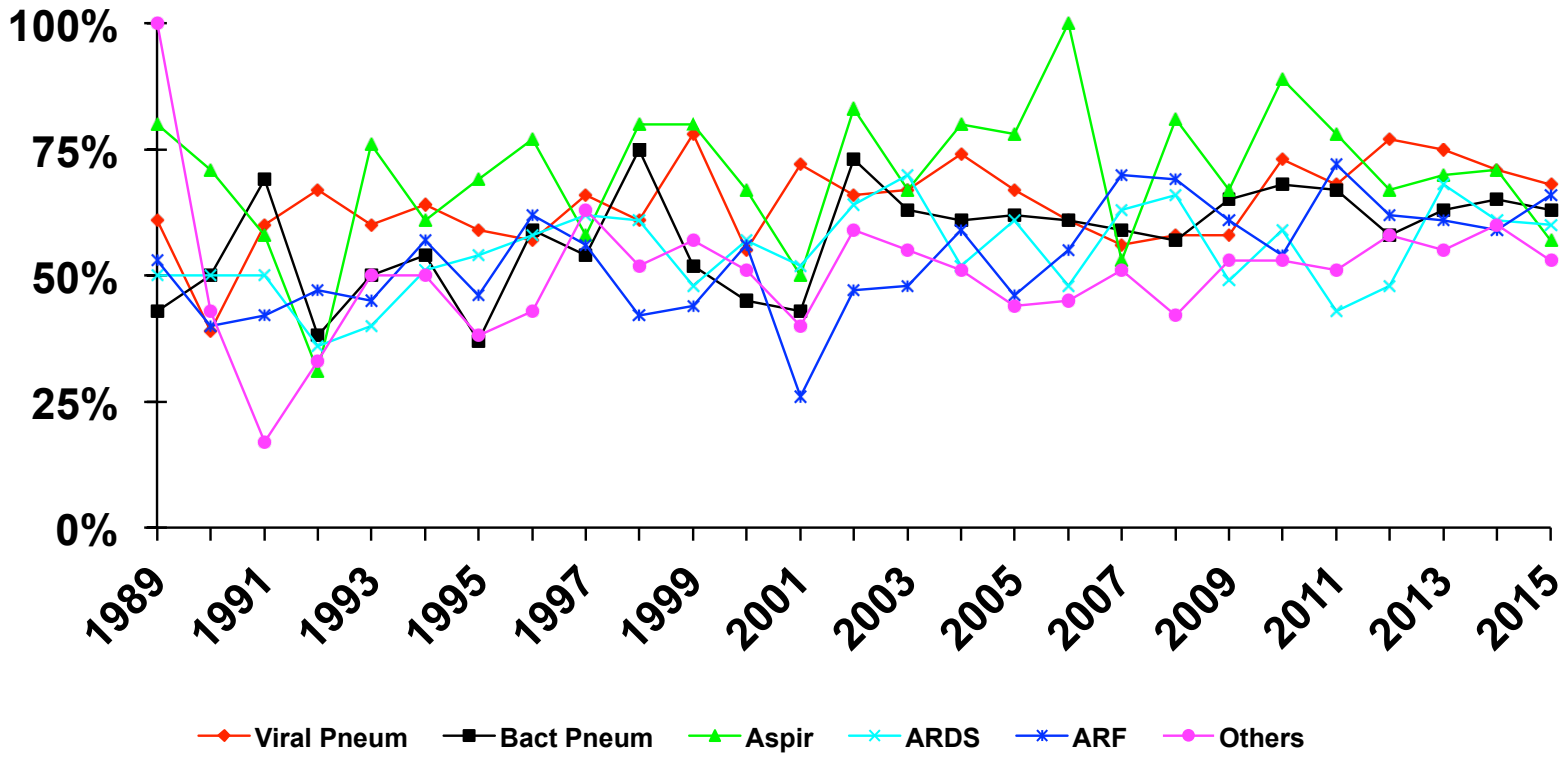
Pediatric Cases by Year and Diagnosis



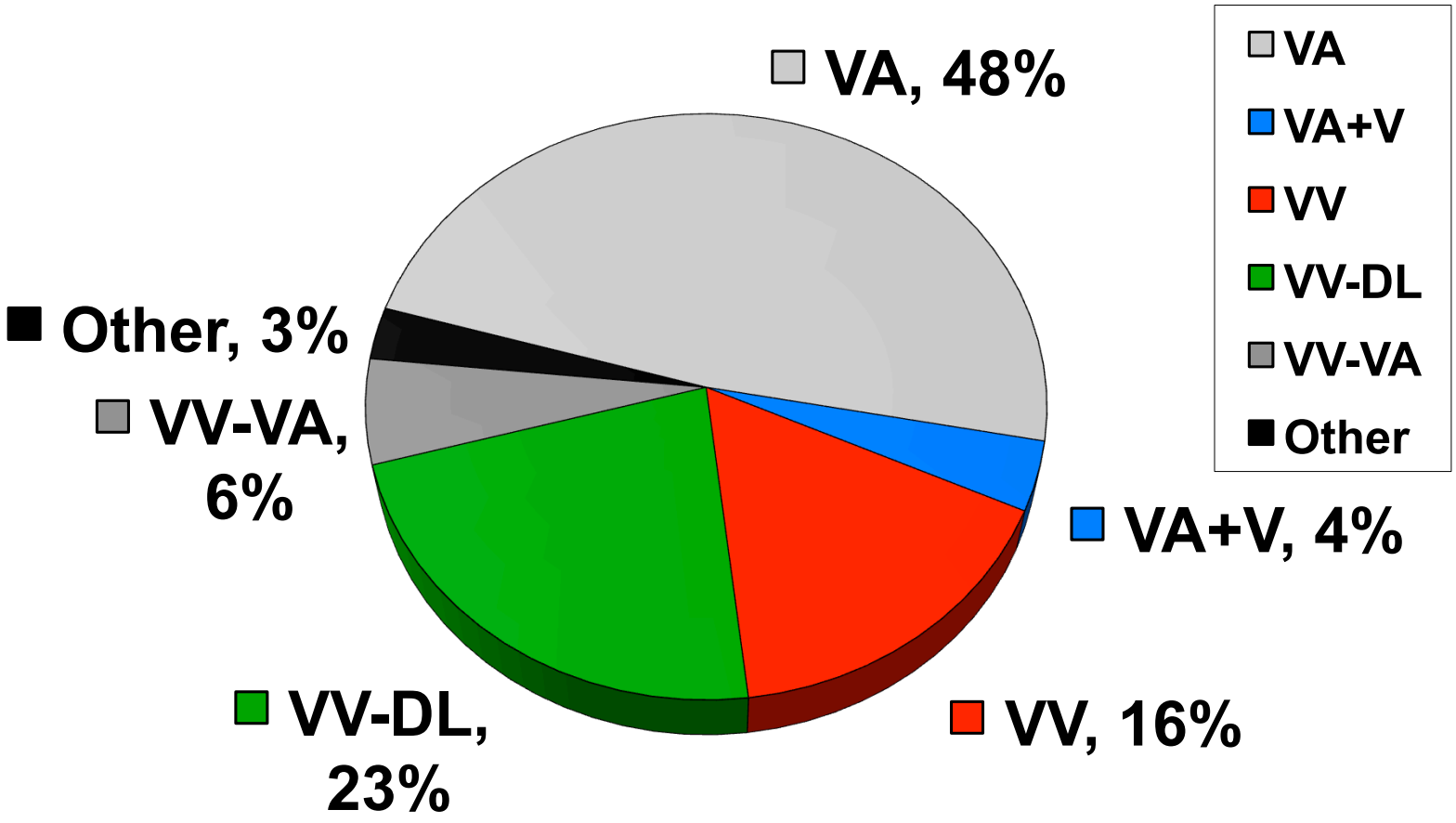
Pediatric Cases by Diagnosis

	Runs	*% Surv*
Viral Pneumonia	1,564	65
Bacterial Pneumonia	736	59
Aspiration	322	68
ARDS	762	56
Acute Resp Failure, Non-ARDS	1,331	55
Other	2,640	52

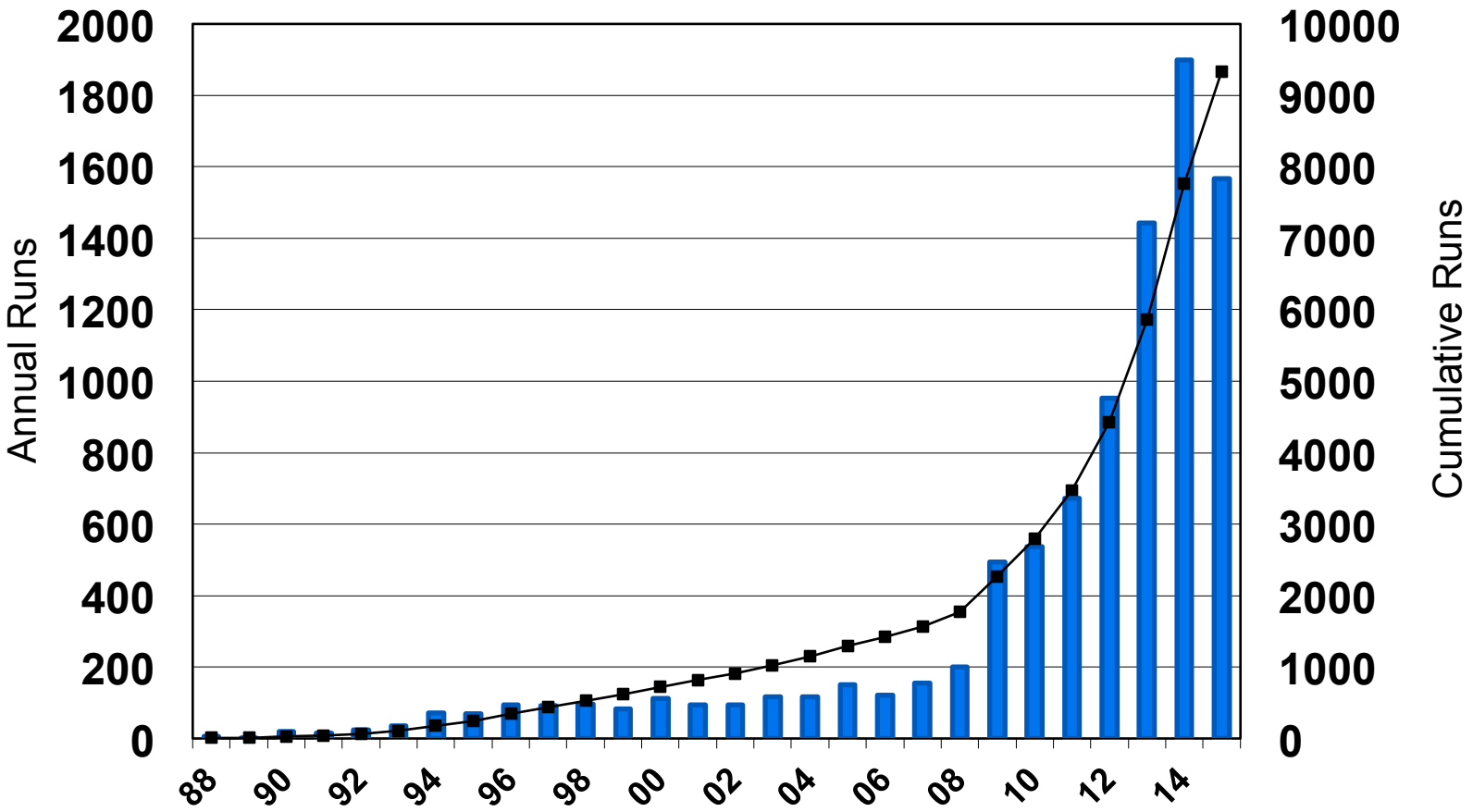
Pediatric Survival by Diagnosis and Year



Initial Mode of Pediatric Respiratory Support



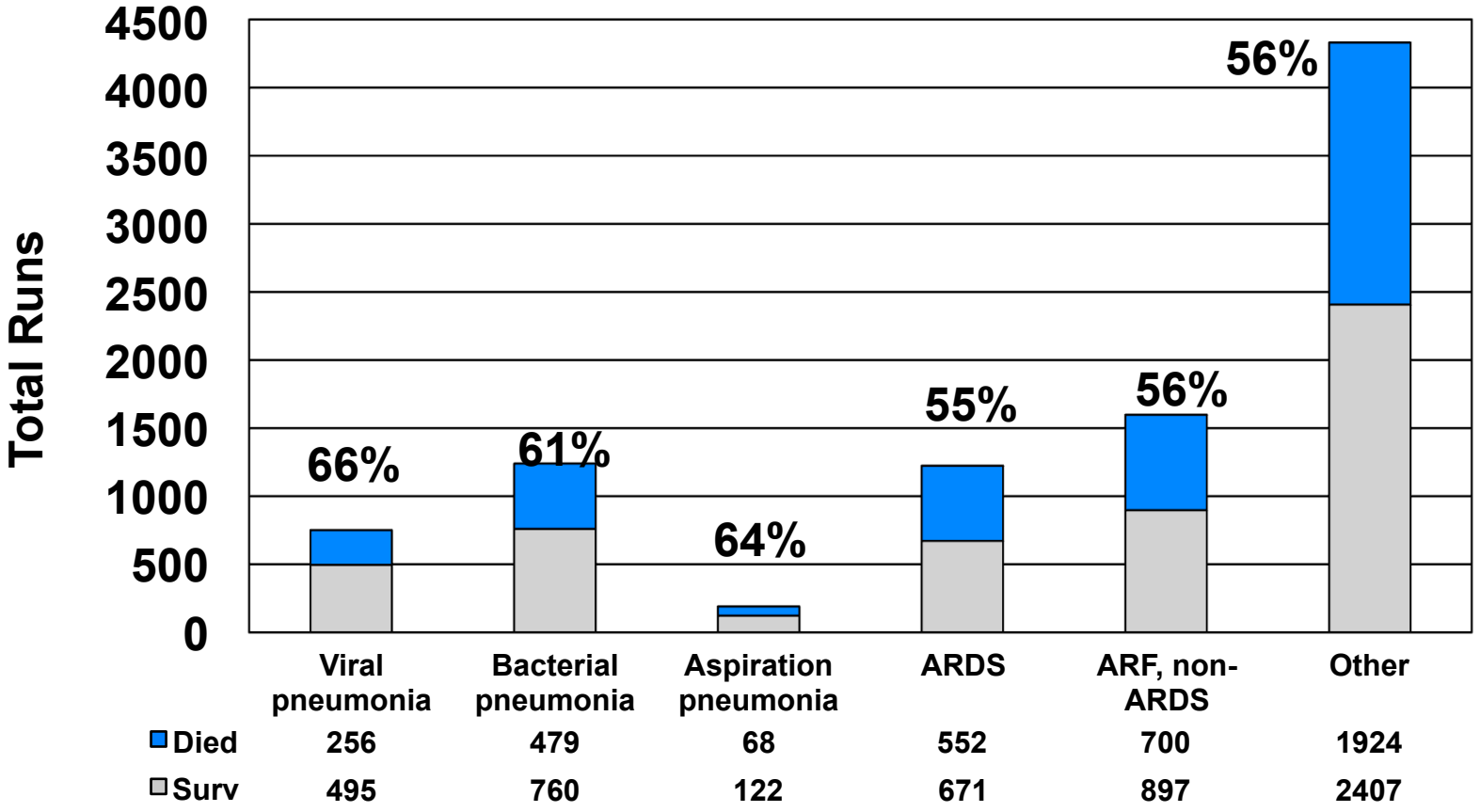
Adult Respiratory Cases



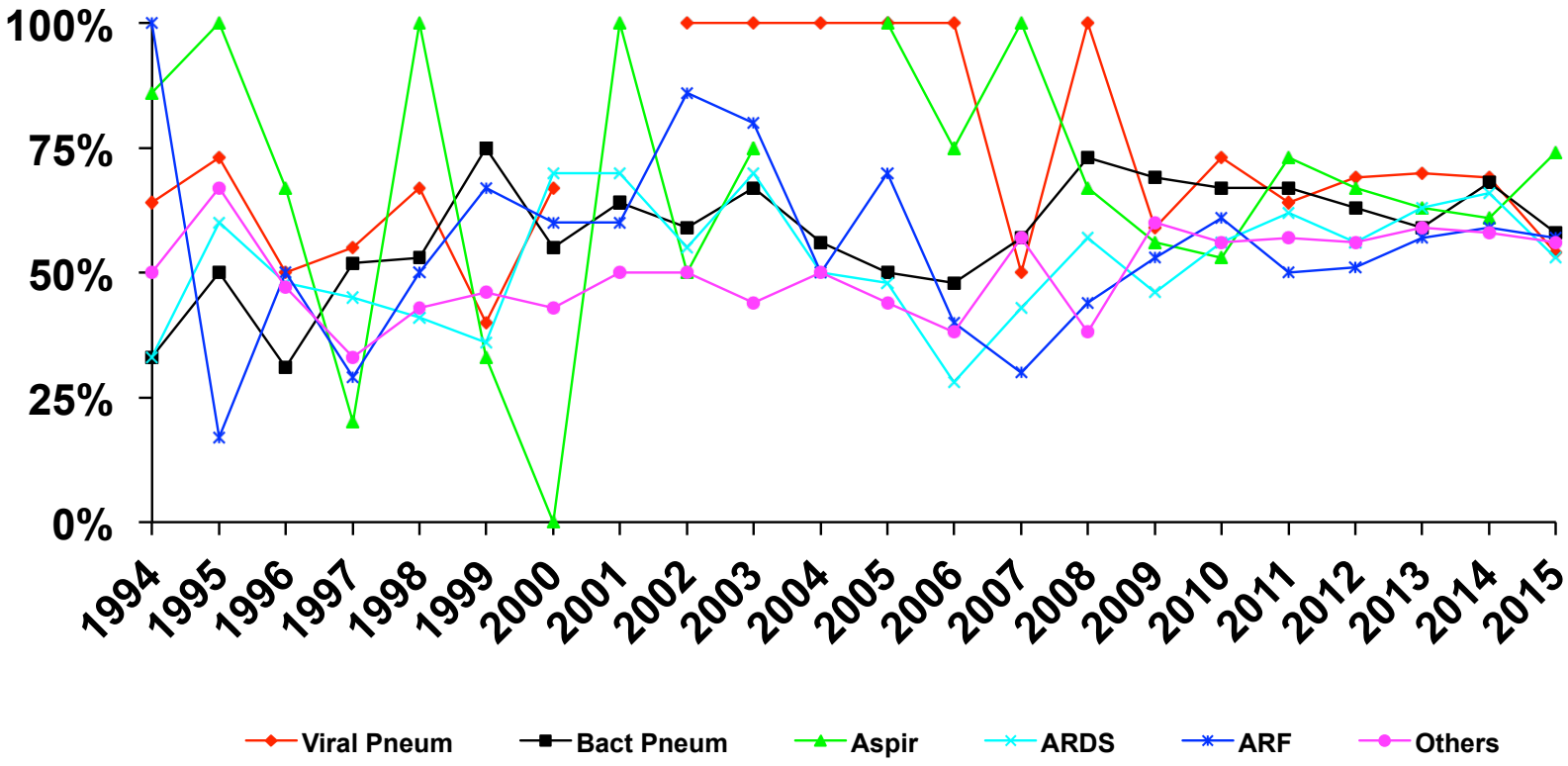
Adult Cases by Diagnosis

	Runs	*% Surv*
Viral Pneumonia	751	66
Bacterial Pneumonia	1,239	61
Aspiration	190	64
ARDS	1,223	55
Acute Resp Failure, Non-ARDS	1,597	56
Other	4,331	56

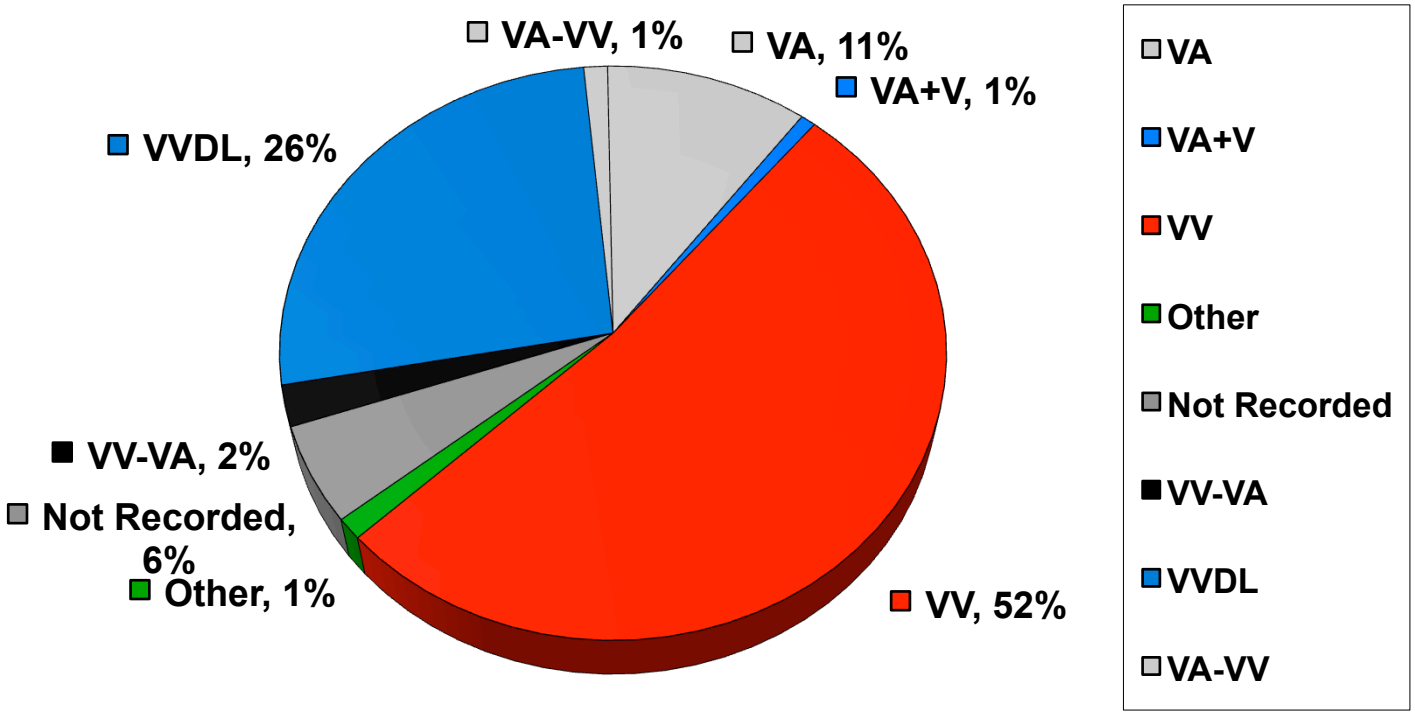
Adult Diagnoses and Survival



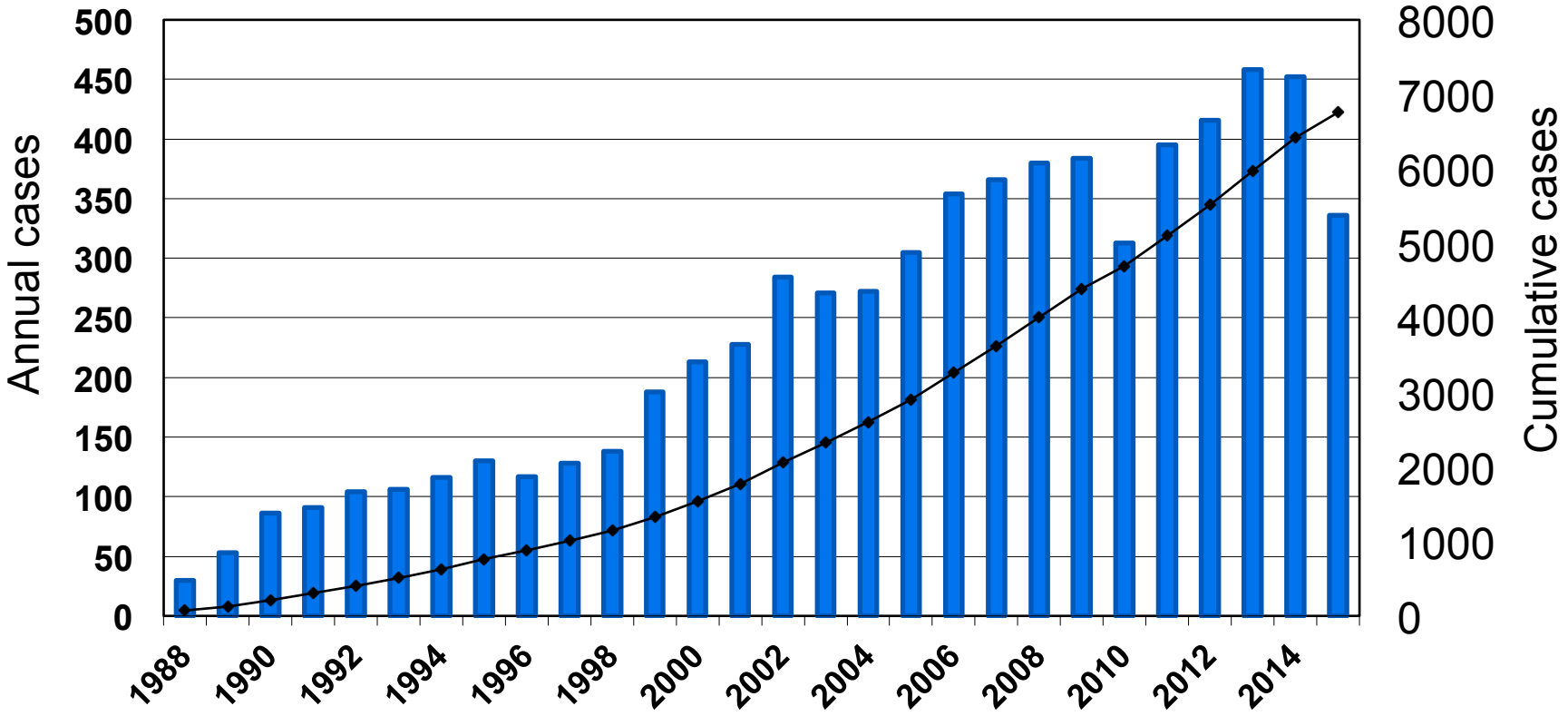
Adult Survival by Diagnosis and Year



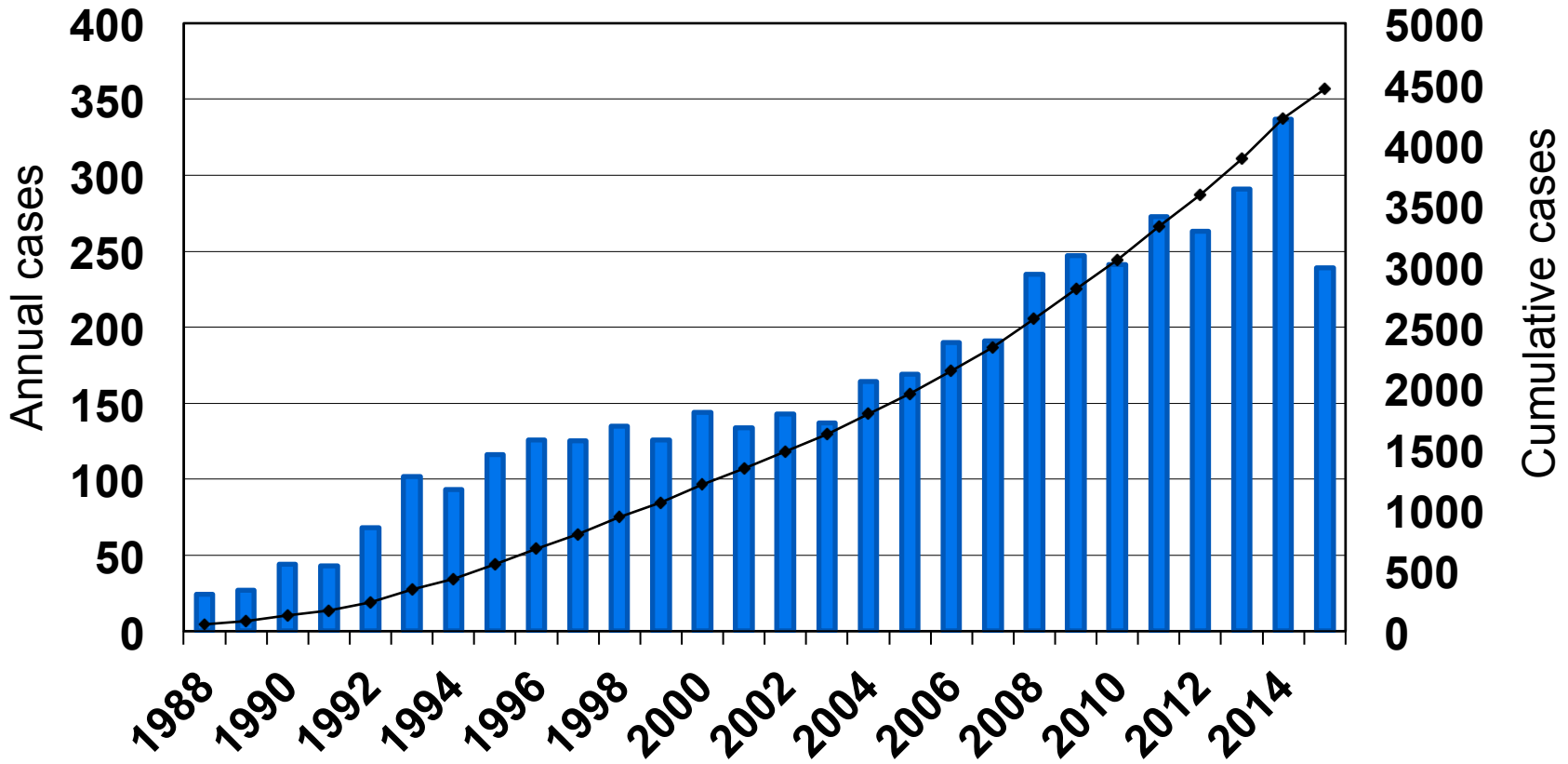
Initial Mode of Adult Respiratory Support



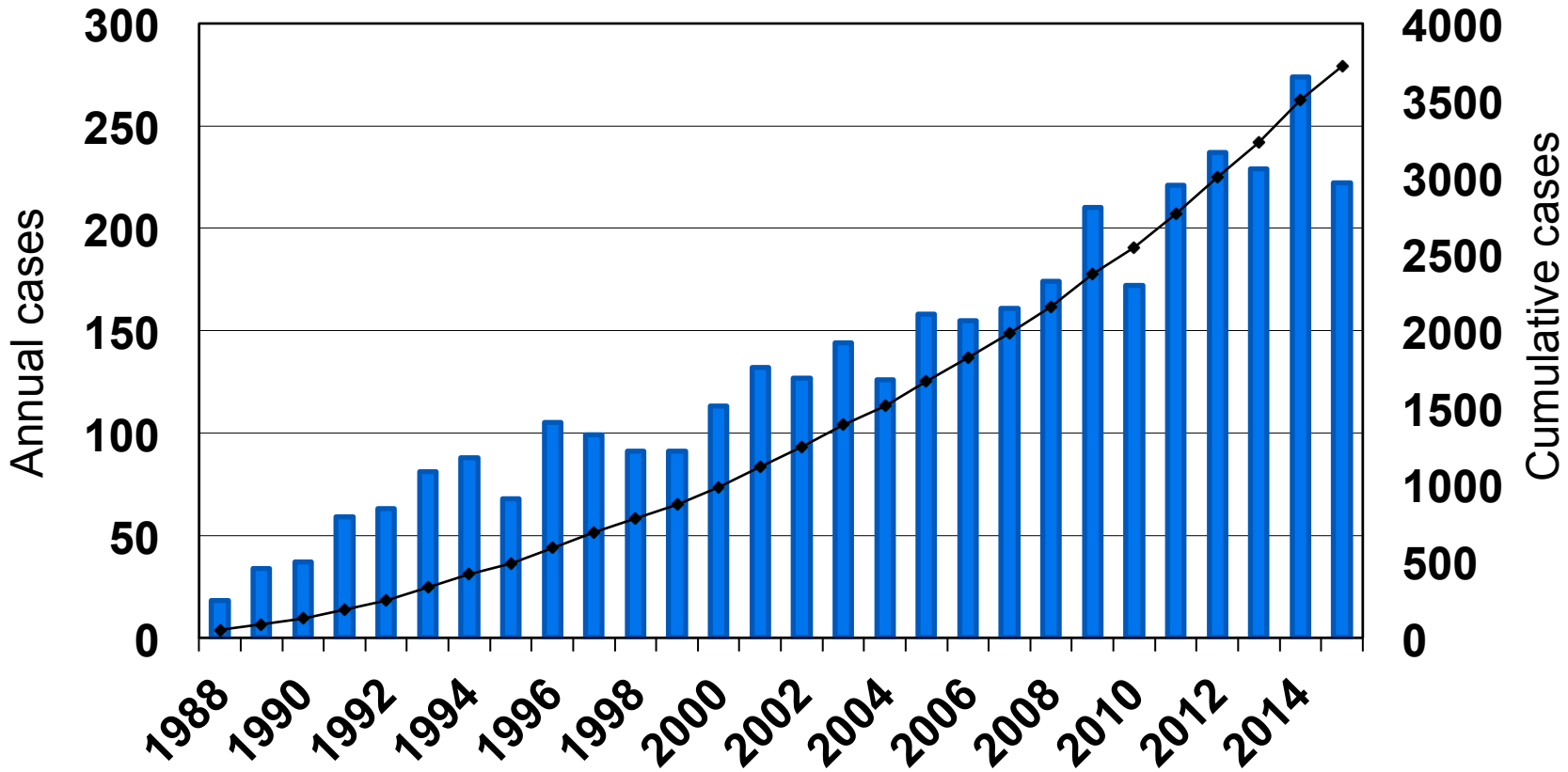
Cardiac Cases By Year
0 – 30 days old



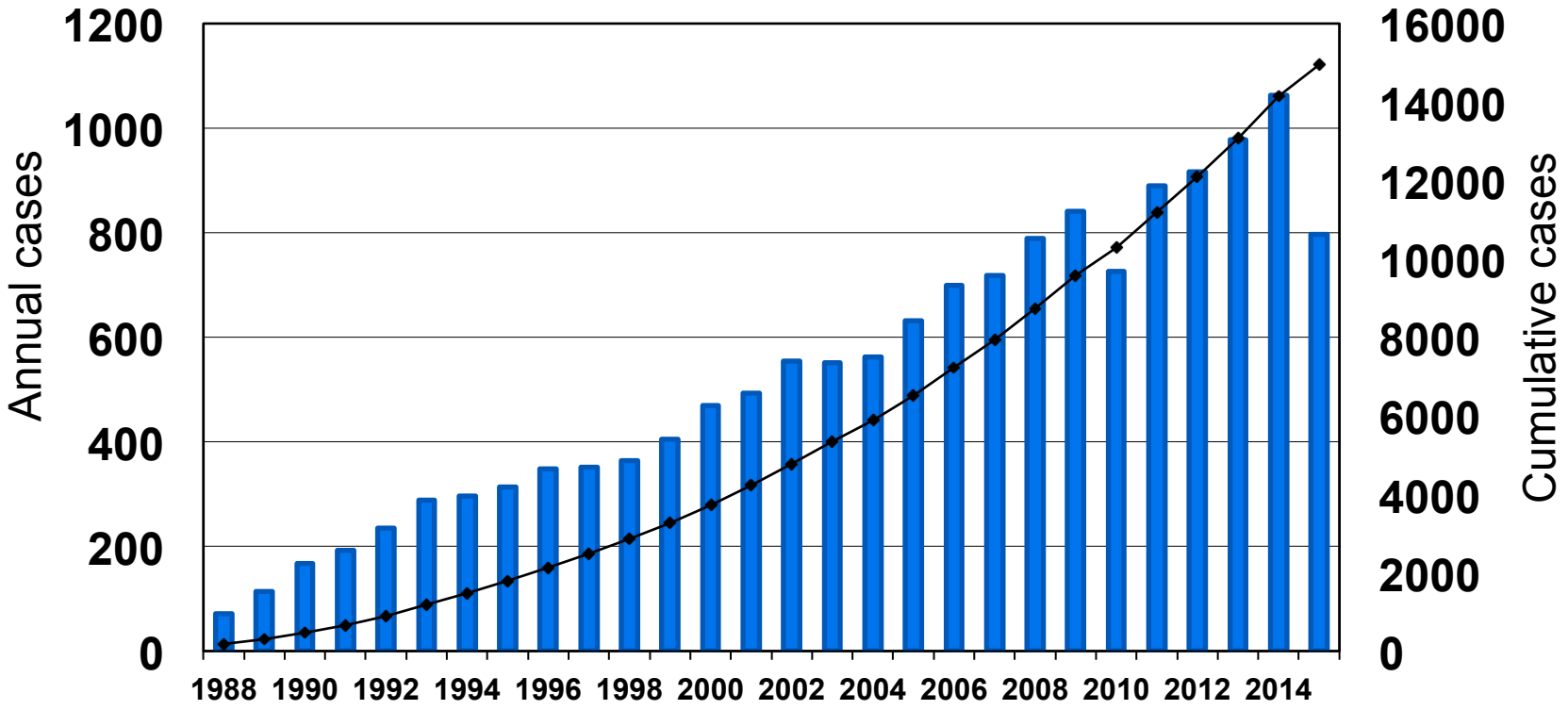
Cardiac Cases By Year
31 days and < 1 year of age



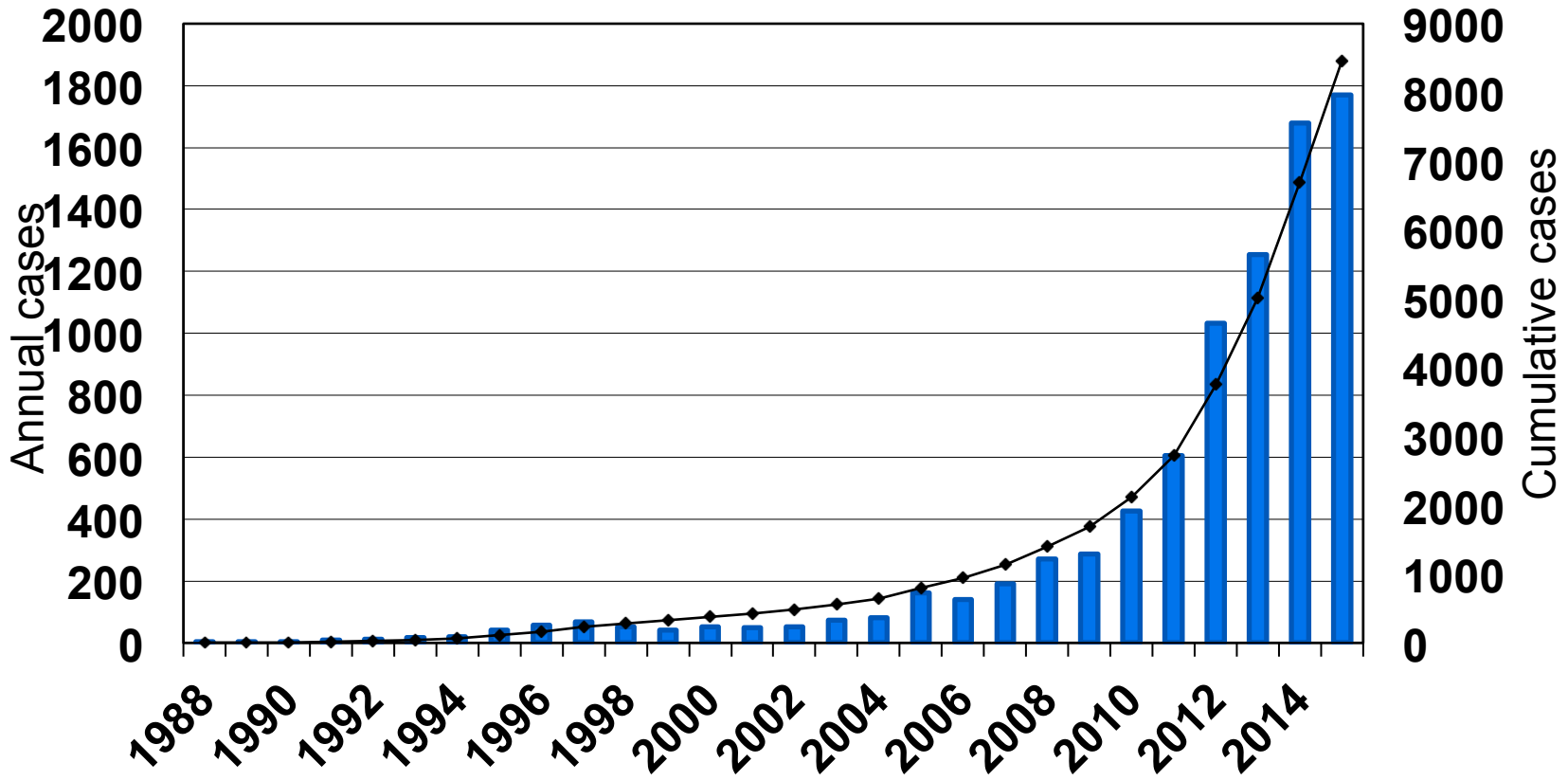
Cardiac Cases By Year
1 to 16 years of age



Cardiac Cases By Year
Under 16 years



Cardiac Cases By Year
16 years old and over



Cardiac ECLS by Diagnosis
0 – 30 days old

	Runs	*% Survived*
Congenital Defect	*5,647*	*40*
Cardiac Arrest	*95*	*32*
Cardiogenic Shock	*103*	*41*
Myocardiopathy	*141*	*61*
Myocarditis	*83*	*52*
Other	*688*	*45*

Cardiac ECLS by Diagnosis
31 days and < 1 year of age

	Runs	*% Survived*
Congenital Defect	3,300	47
Cardiac Arrest	111	42
Cardiogenic Shock	81	46
Myocardiopathy	195	55
Myocarditis	96	72
Other	676	49

Cardiac ECLS by Diagnosis
1 to 16 years of age

	Runs	*% Survived*
Congenital Defect	1,597	47
Cardiac Arrest	132	40
Cardiogenic Shock	155	53
Myocardiopathy	535	62
Myocarditis	301	71
Other	1,003	55

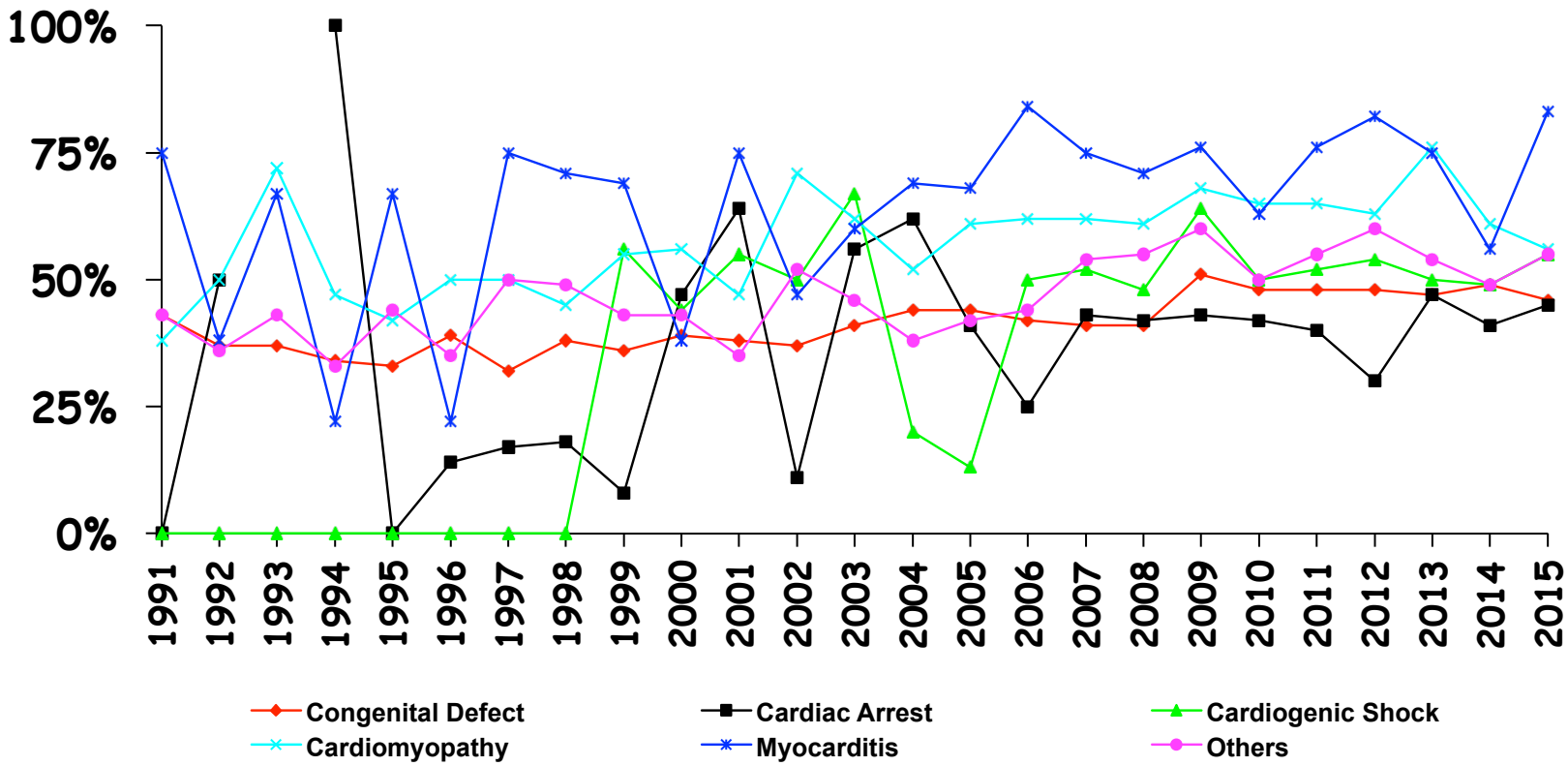
Cardiac ECLS by Diagnosis
Under 16 years

	Runs	*% Survived*
Congenital Defect	10,544	43
Cardiac Arrest	338	38
Cardiogenic Shock	339	47
Myocardiopathy	871	61
Myocarditis	480	68
Other	2,367	50

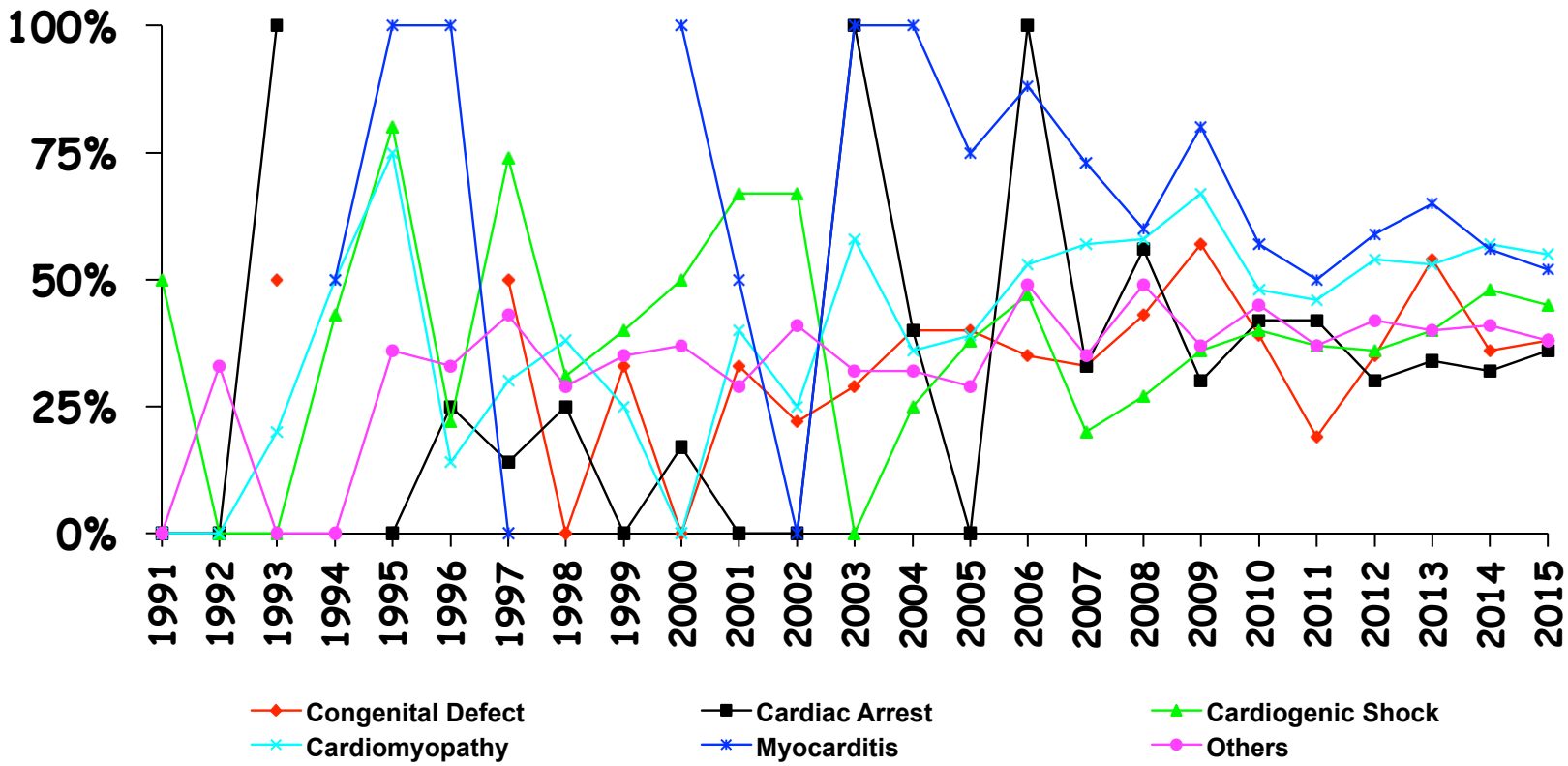
Cardiac ECLS by Diagnosis
16 years old and over

	Runs	*% Survived*
Congenital Defect	378	37
Cardiac Arrest	434	33
Cardiogenic Shock	1,717	42
Myocardiopathy	642	51
Myocarditis	207	62
Other	5,076	40

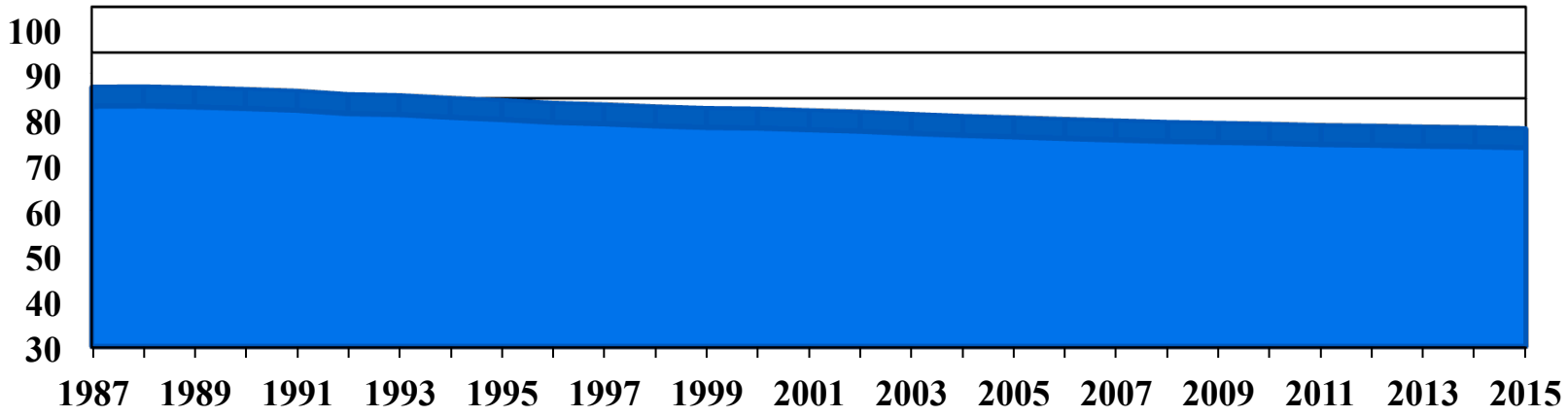
Cardiac Survival by Diagnosis and Year
Under 16 years



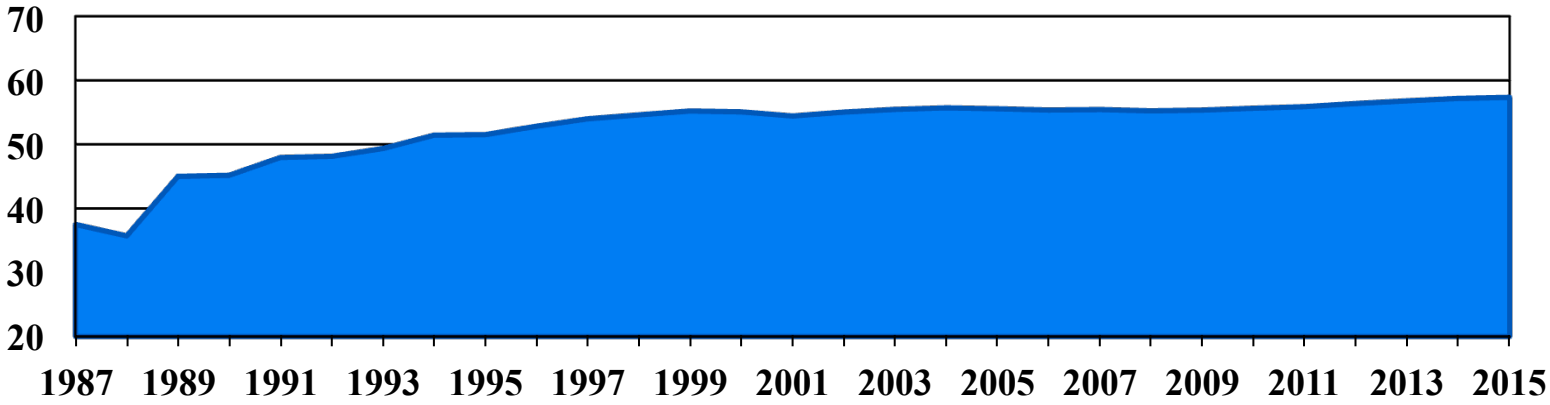
Cardiac Survival by Diagnosis and Year
16 years old and over



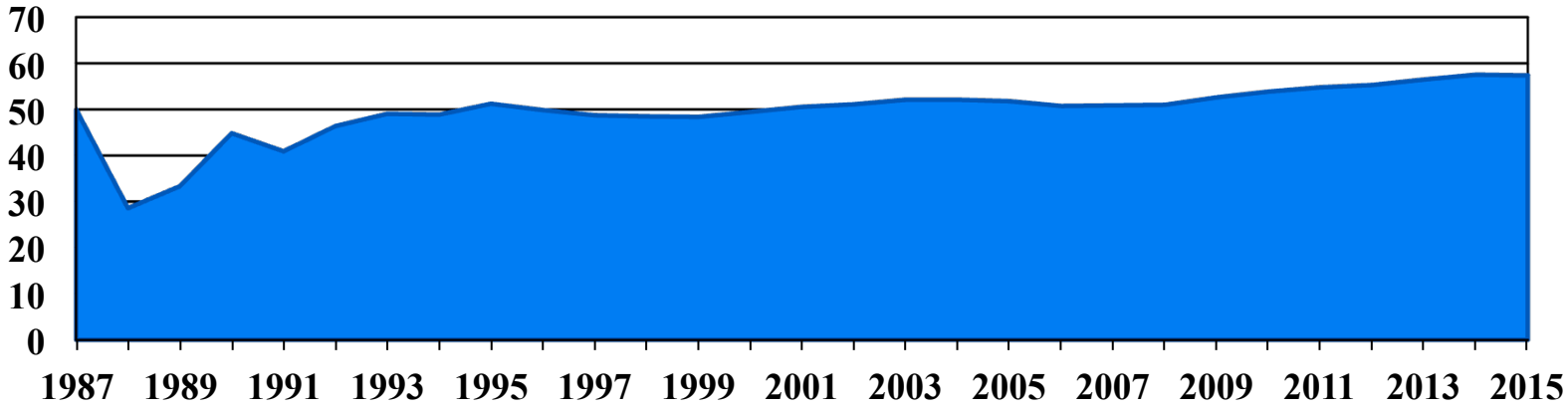
Cumulative Survival in Neonatal Respiratory Support



Cumulative Survival in Pediatric Respiratory Support

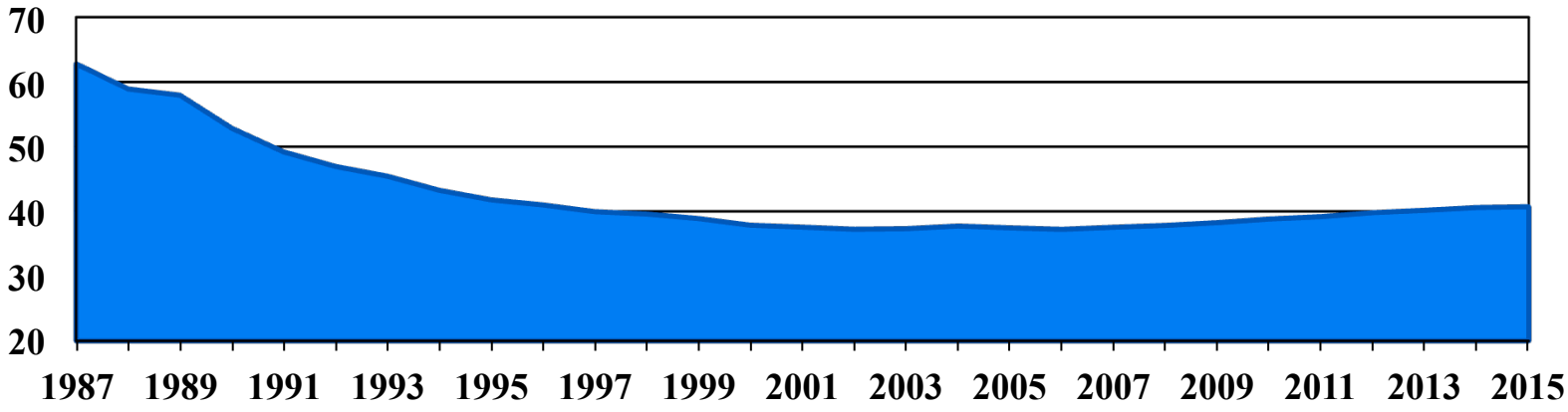


Cumulative Survival in Adult Respiratory Support



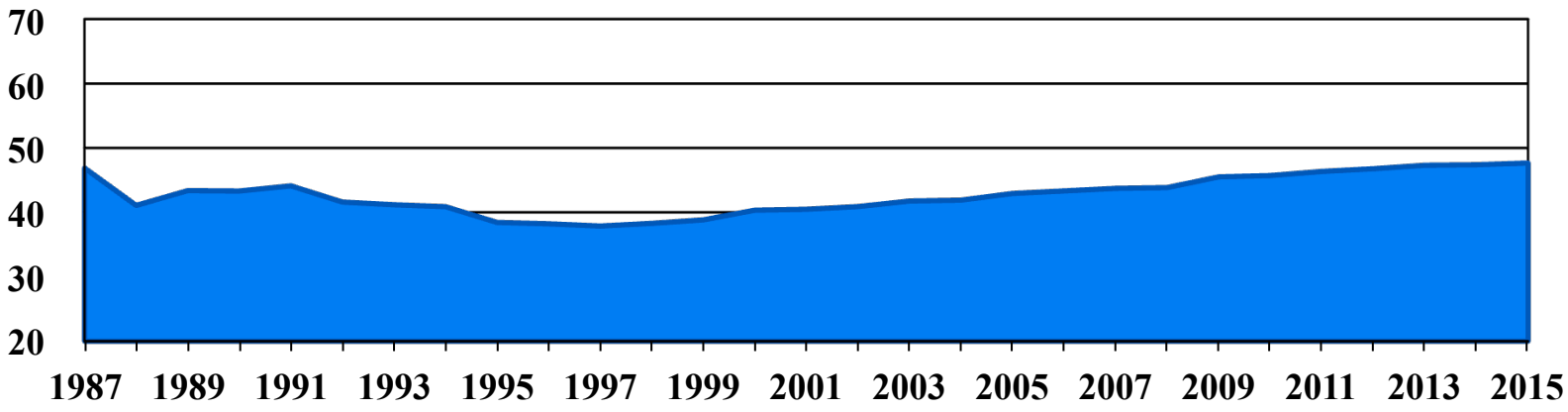
Cumulative Survival in Cardiac Support

0 – 30 days old



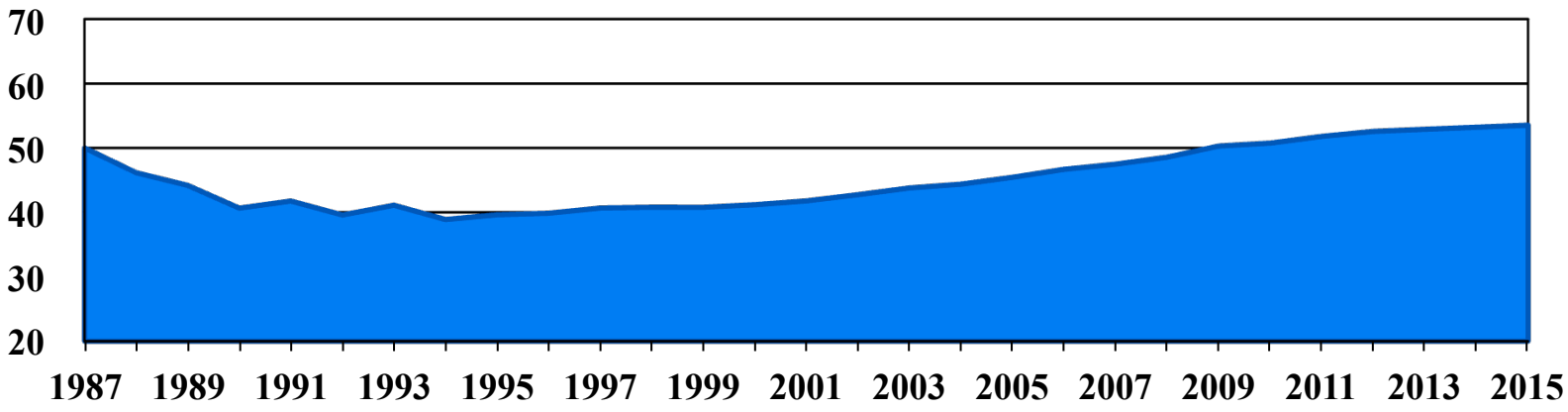
Cumulative Survival in Cardiac Support

31 days and < 1 year of age



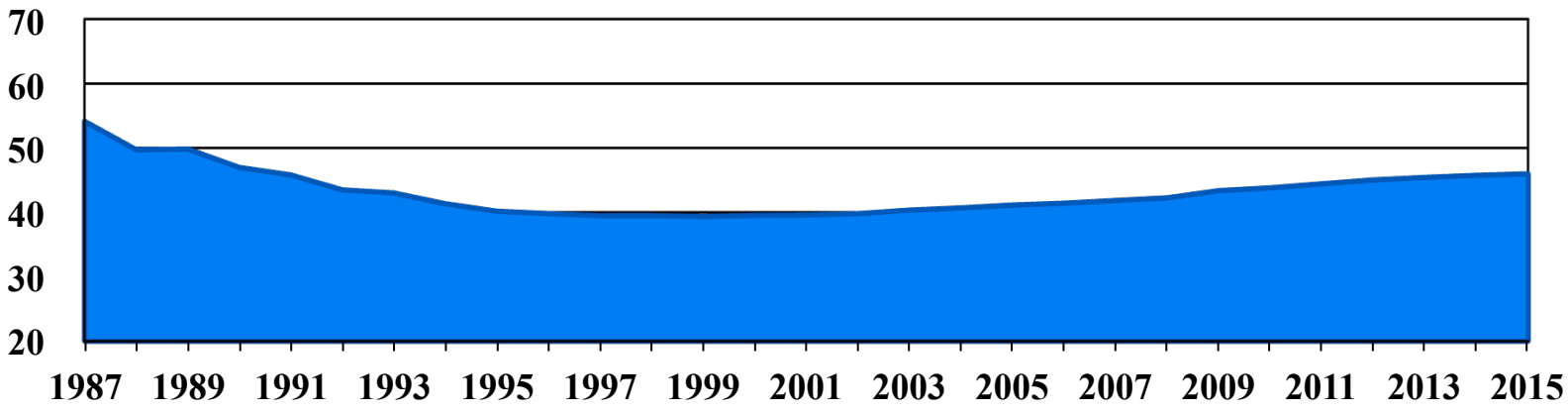
Cumulative Survival in Cardiac Support

1 to 16 years of age



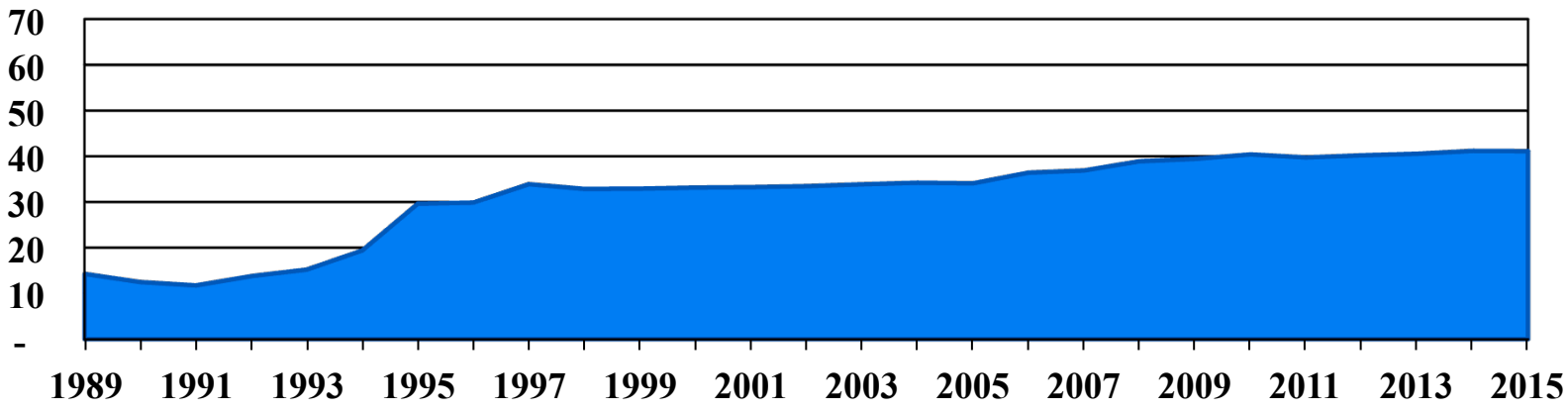
Cumulative Survival in Cardiac Support

Under 16 years of age



Cumulative Survival in Cardiac Support

16 years old and over



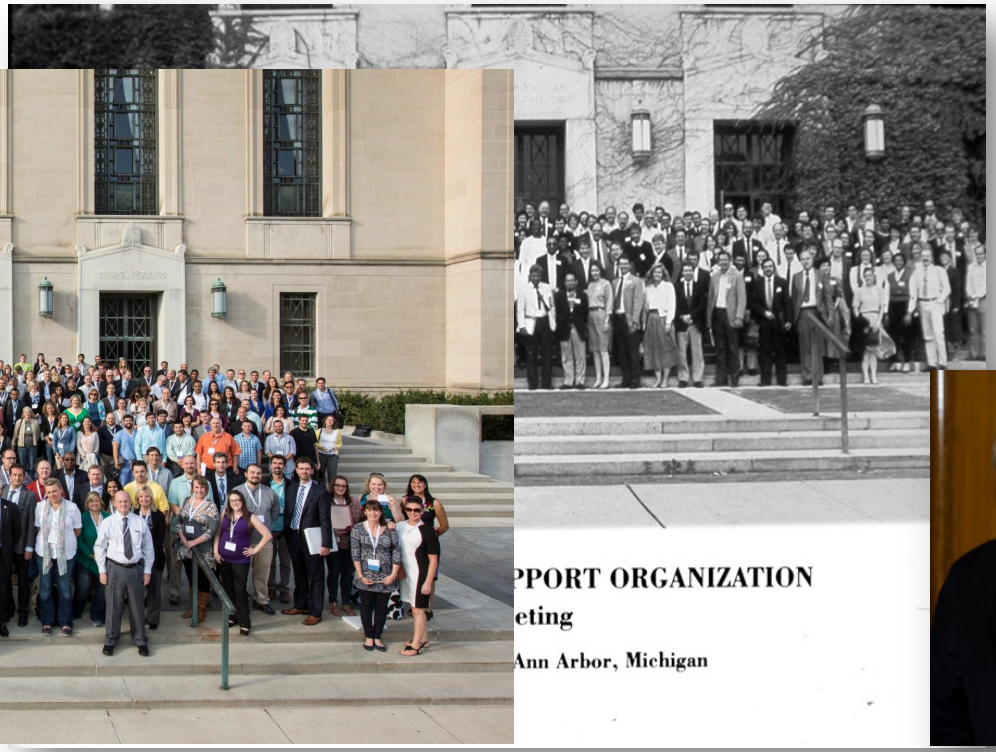
ELSO Registry
&
Guidelines in the Pocket

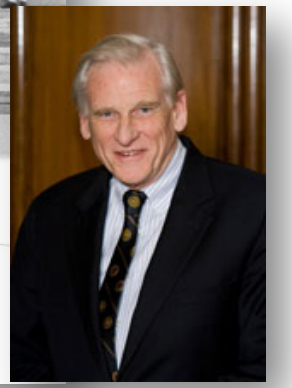
Roberto Lorusso, MD, PhD

Maastricht University Medical Centre (MUMC)

Euro-ELSO Chair
ELSO Executive & Steering Comittee Member

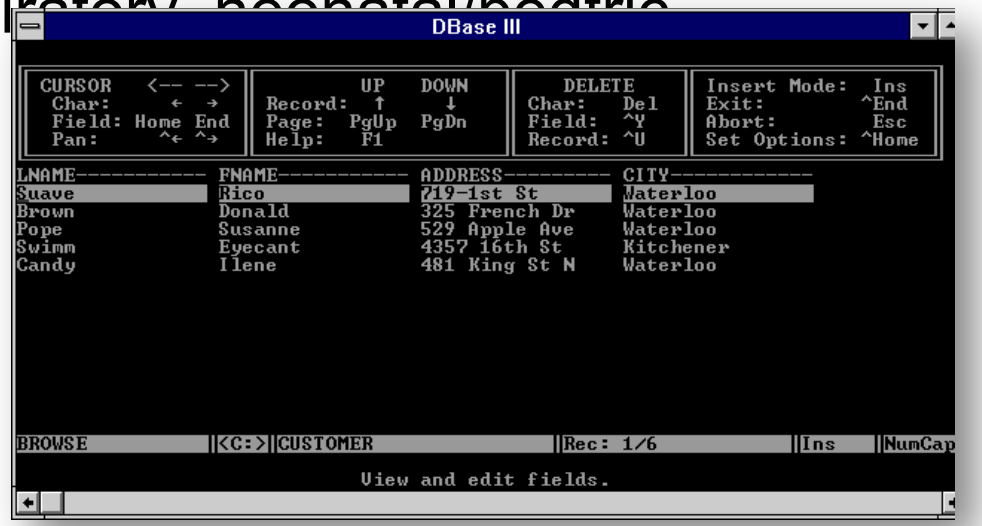
1989: The Origins of ELSO



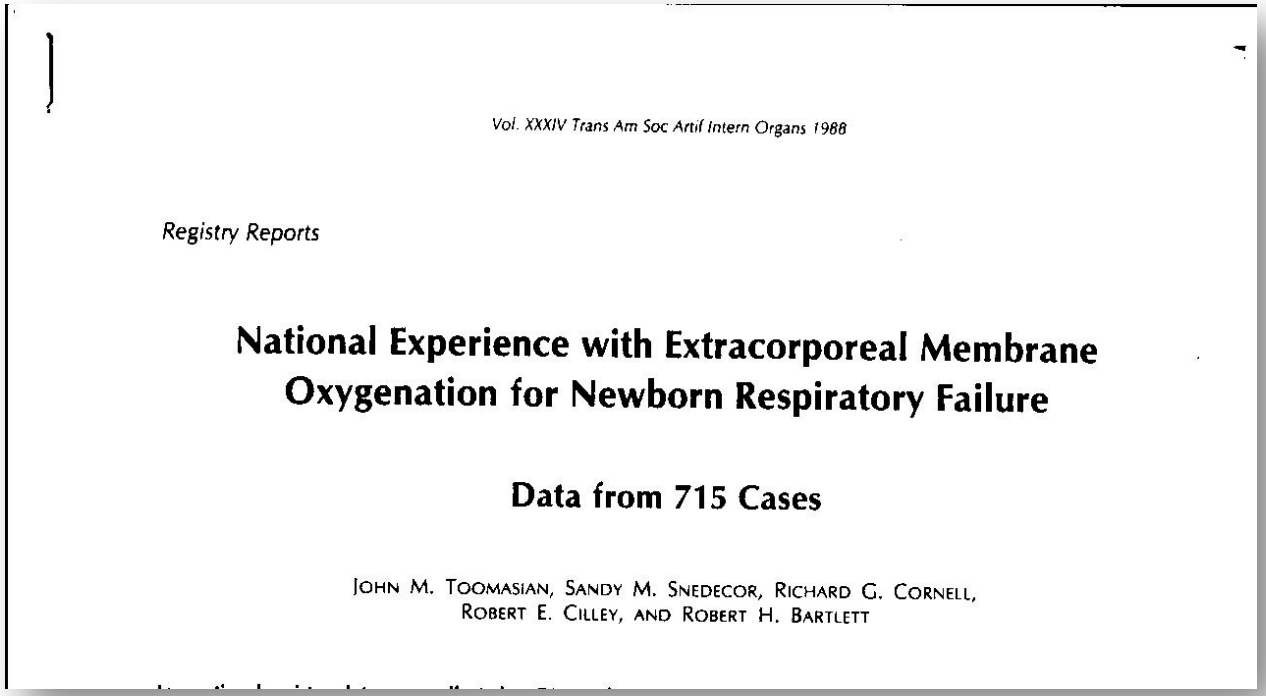


The Original ELSO Registry

- First implemented in 1989
- Data from 1976-1986
- Originally 4 separate databases (neonatal respiratory, pediatric respiratory, neonatal/pedtric cardiac, adult respiratory)
- dBase, lots of free text
- Paper case reports



Original ELSO Registry Report: 1988



Vol. XXXIV Trans Am Soc Artif Intern Organs 1988

Registry Reports

National Experience with Extracorporeal Membrane Oxygenation for Newborn Respiratory Failure

Data from 715 Cases

JOHN M. TOOMASIAN, SANDY M. SNEDECOR, RICHARD G. CORNELL, ROBERT E. CILLEY, AND ROBERT H. BARTLETT

Courtesy of Dr. Bartlett

Findings in the First Registry Publication

Table 5. Overall Results of Neonatal ECMO

	Total	Survived	% Survived
All Cases	715	579	81

	Total n	Incidence (% of 715)	Survival n	Survival %	*P* value*
Primary diagnosis:					
MAS	310	43	281	91	.06
RDS	96	13	75	78	.71
CDH	121	17	78	65	.00
Sepsis	64	9	46	72	.27
PPHN/PFC	100	14	84	84	.71
Pneumothorax	3	<1	3	100	.74
Cardiac	12	2	6	50	.37
Other	9	1	6	67	.46
Secondary diagnosis:					
MAS	29	4	19	66	.14
RDS	21	3	15	71	.50
Sepsis	24	3	20	83	.89
PPHN/PFC	438	61	347	79	.63
Pneumothorax	170	24	135	79	.79
Cardiac	10	1	6	60	.14
Other	92	13	69	75	.42
Comp. of preg.	282	39	225	80	.79
Non-resp. diagnosis	85	11	63	74	.36
Seizures	60	8	51	85	.81
Renal failure	70	10	44	62	.00
PDA ligation	30	4	15	50	.16
Other surgery	42	6	22	54	.00
Vasodilators used	674	94	549	81	.88

* *P* value for percent survival compared to overall survival rate (81%).

First ELSO Registry Publication

Courtesy of Dr. Bartlett

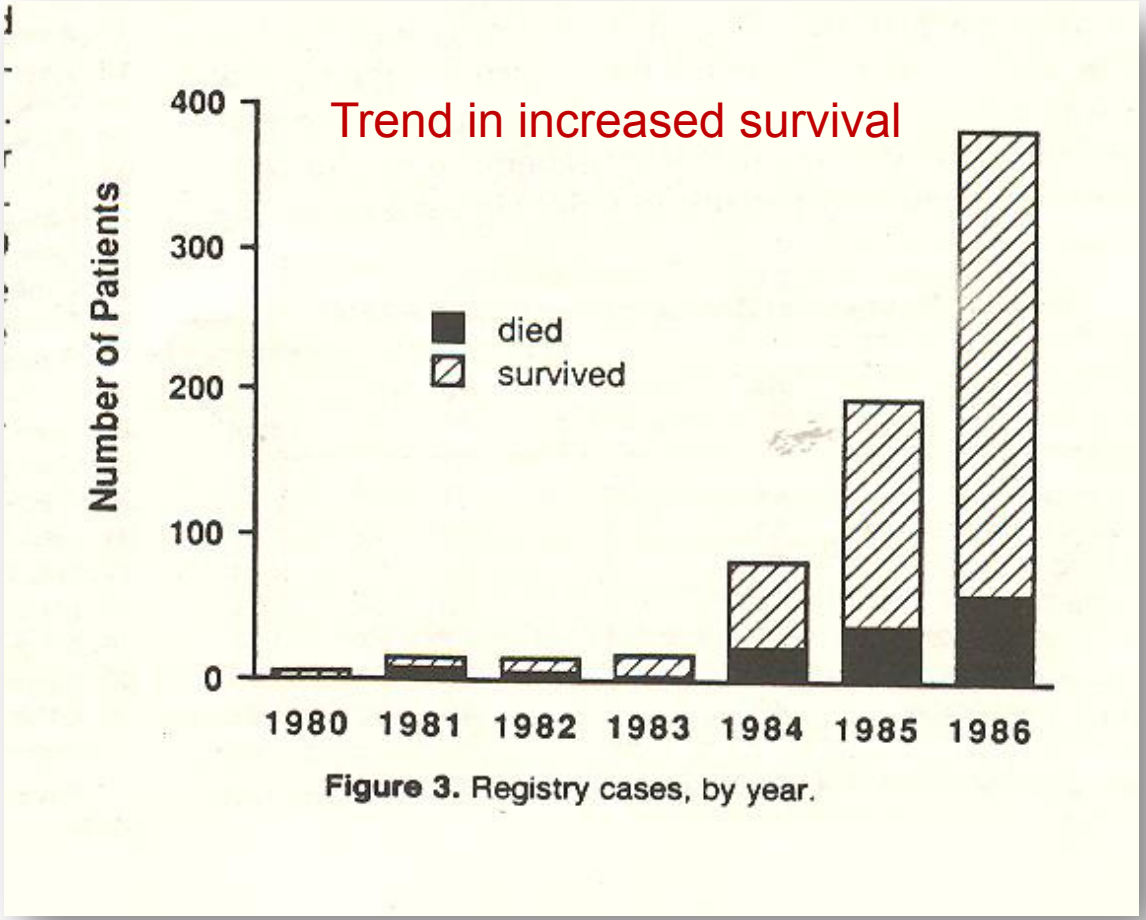
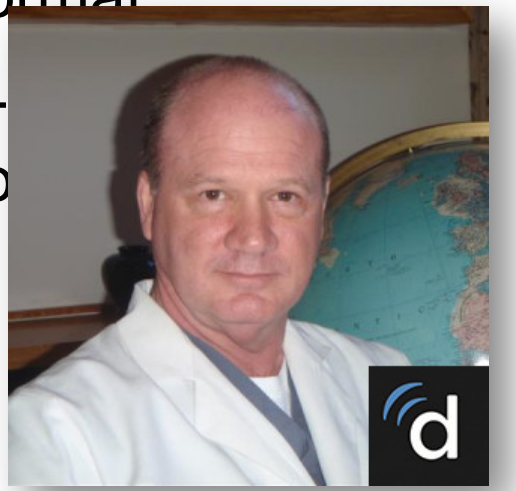


Figure 3. Registry cases, by year.

1998: Registry Re-engineering

- Conversion from 4 individual databases to a single registry
- Access database
- Restructuring from single to multi-table format
- Use of Structured Query Language (SQL
- Standardized case report forms→ creatio Word electronic form
- Use of ICD-9, CPT codes



Steve Conrad MD, PhD: LSU-Shreveport

2011: Welcome to the Web

- Web-based online registry format created 2011
- Microsoft SQL database server running under Windows Server 2008
- Direct entry into Registry database
- Full-time global availability
- Ability to customize data entry for global culture
- Enhanced data validation
- Online lookup of ICD-9 and CPT codes

Published Reports

Extracorporeal Life Support Organization Registry Report 2012

MATTHEW L. PADEN,* STEVEN A. CONRAD,† PETER T. RYCUS,‡ AND RAVI R. THIAGARAJAN§, ON BEHALF OF THE ELSO REGISTRY

In this article, summary data from the annual international Extracorporeal Life Support Organization (ELSO) Registry Reports through July 2012 are presented. Nearly 51,000 patients have received extracorporeal life support (ECLS). Of the patients, 50% (>25,000) were neonatal respiratory failure, with a 75% overall survival to discharge or transfer. Congenital diaphragmatic hernia remains a major use of ECLS in this population with 51% survival. Extracorporeal life support use for pediatric respiratory failure has nearly doubled since 2000, with approximately 350 patients treated per year in the past 3 years examined (56% survival). Previously stable at about 100 cases a year for a decade, adult respiratory failure ECLS cases increased dramatically in 2009 with the H1N1 influenza pandemic and publication of the Conventional ventilation or ECMO for Severe Adult Respiratory failure (CESAR) trial results and have remained at approximately 400 cases a year through 2011 (55% survival). Use of ECLS for cardiac support represents a large area of consistent growth. Approximately 13,000 patients have been treated with survival to discharge rates of 40%, 49%, and 39% for neonates, pediatric, and adults, respectively. *ASAIO Journal* 2013;59:202–210.

ECLS devices. In 2011, ELSO had 170 domestic and international centers actively reporting data to the registry.

Maintaining a registry of ECLS cases is one of the major functions of ELSO. The ELSO Registry is funded solely by ELSO and receives no external funding. A data use agreement is in place with each individual ECLS center to provide ELSO member centers with a limited data set for research or quality assurance purposes. Entry of patient data into the registry is strongly encouraged to all ELSO members. Initially, the registry was implemented as a system of handwritten paper forms filled out by individual centers that were manually entered at ELSO into a flat file database. Recognizing the growth of ECLS and the needs of ELSO members, the registry has evolved into a secure, encrypted web-based data entry system (http://www.elsonet.org) with integrated data integrity monitoring that stores data in a Microsoft SQL Server (Microsoft Corporation, Redmond, WA). Addition of disease- and condition-specific data, including specific surgical information for the cardiac support patients, International Classification of Diseases (ICD-9), and Current Procedural Terminology (CPT) values to the database, allows a standard structure that promotes consistency in query results. This modernization has provided multiple benefits to

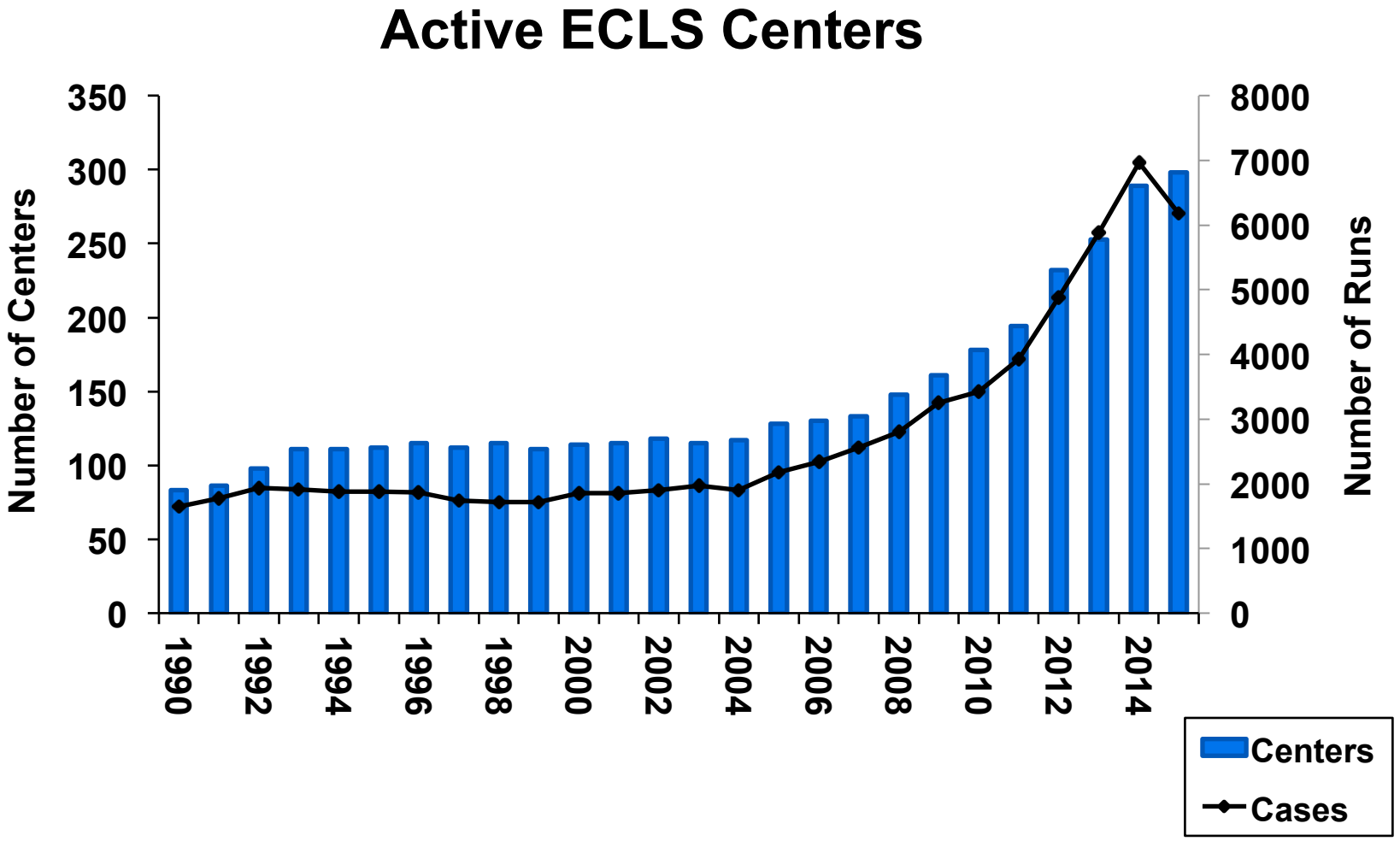
ASAIO Journal 2013;59:202–210.

ELSO Registry Data Summary

January 2016

Current State of the Registry

- Over 300 Centers
- Over 40 Countries
- Current co-chairs:
  - Ravi Thiagarajan MD, MPH
  - Matthew Paden MD

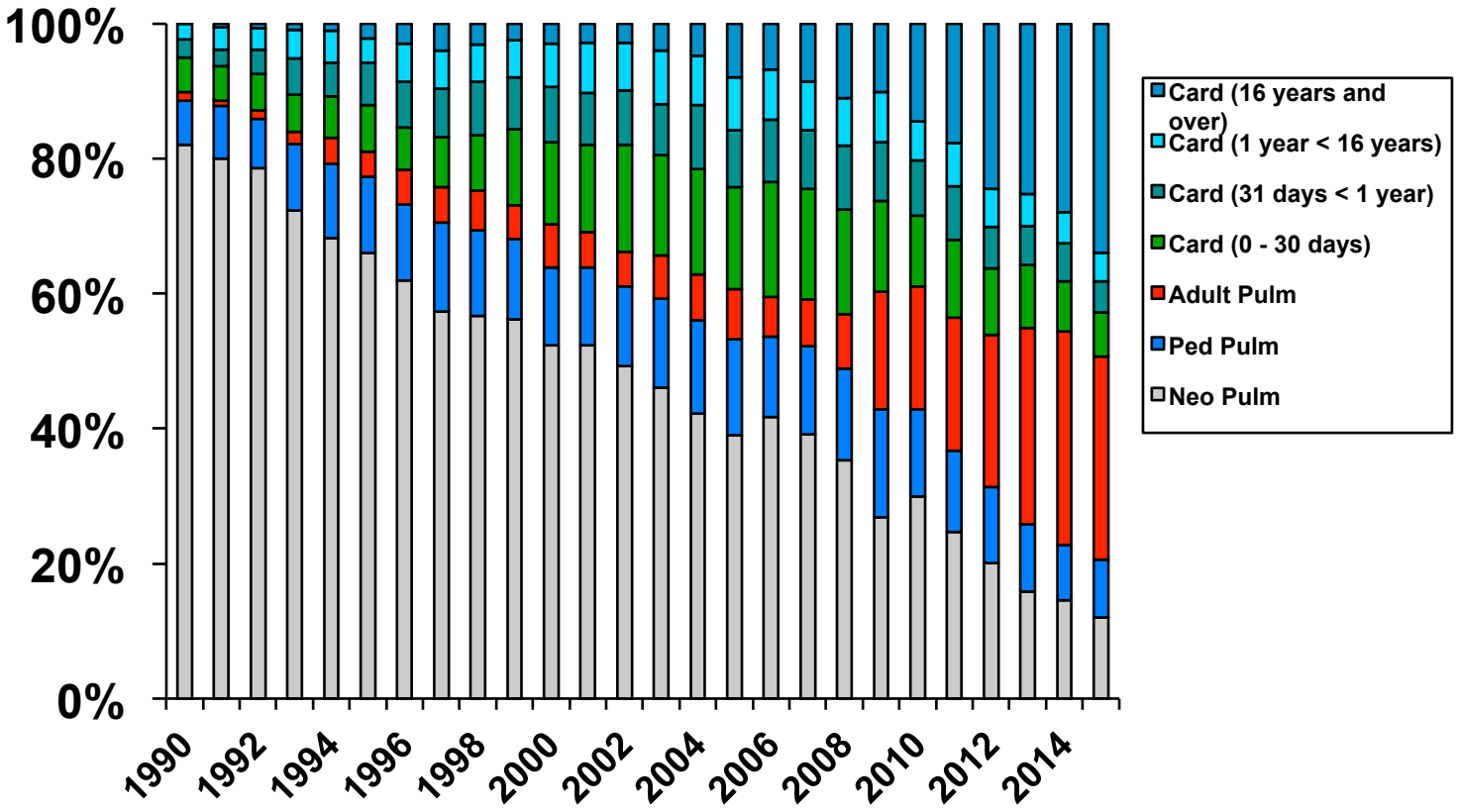

Active ECLS Centers
Number of Centers
Number of Runs
350
300
250
200
150
100
50
0
8000
7000
6000
5000
4000
3000
2000
1000
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Centers
Cases


Greenland
Iceland
Finland
Russia
Canada
Ukraine
Kazakhstan
Mongolia
China
Spain
Italy
North Atlantic Ocean
Algeria
Libya
Egypt
Saudi Arabia
Afghanistan
Mali
Niger
Sudan
Chad
Nigeria
Ethiopia
Kenya
DR Congo
Tanzania
Angola
Namibia
Botswana
Madagascar
South Africa
Indonesia
Papua New Guinea
Australia
New Zealand
Indian Ocean
South Atlantic Ocean
Venezuela
Colombia
Peru
Bolivia
Argentina
Southern Ocean

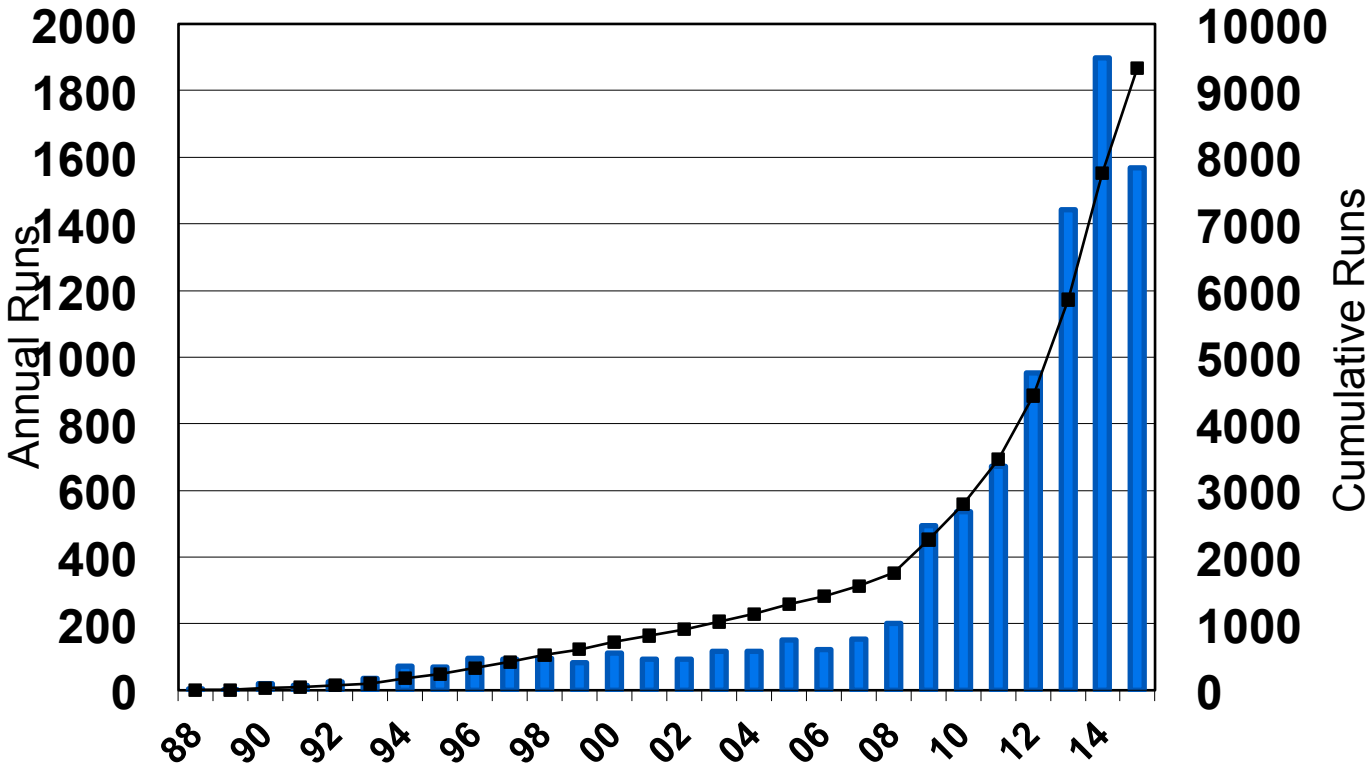
Overall Patient Outcomes

	Total	Surv ECLS		Surv to DC	
Neonatal					
Respiratory	28,723	24,155	84%	21,274	74%
Cardiac	6,269	3,885	62%	2,599	41%
ECPR	1,254	806	64%	514	41%
Pediatric					
Respiratory	7,210	4,787	66%	4,155	58%
Cardiac	8,021	5,341	67%	4,067	51%
ECPR	2,788	1,532	55%	1,144	41%
Adult					
Respiratory	9,102	5,989	66%	5,254	58%
Cardiac	7,850	4,394	56%	3,233	41%
ECPR	2,379	948	40%	707	30%
Total	73,596	51,837	70%	42,947	58%

Runs by Year


100%
80%
60%
40%
20%
0%
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Card (16 years and over)
Card (1 year < 16 years)
Card (31 days < 1 year)
Card (0 - 30 days)
Adult Pulm
Ped Pulm
Neo Pulm

Adult Respiratory Cases

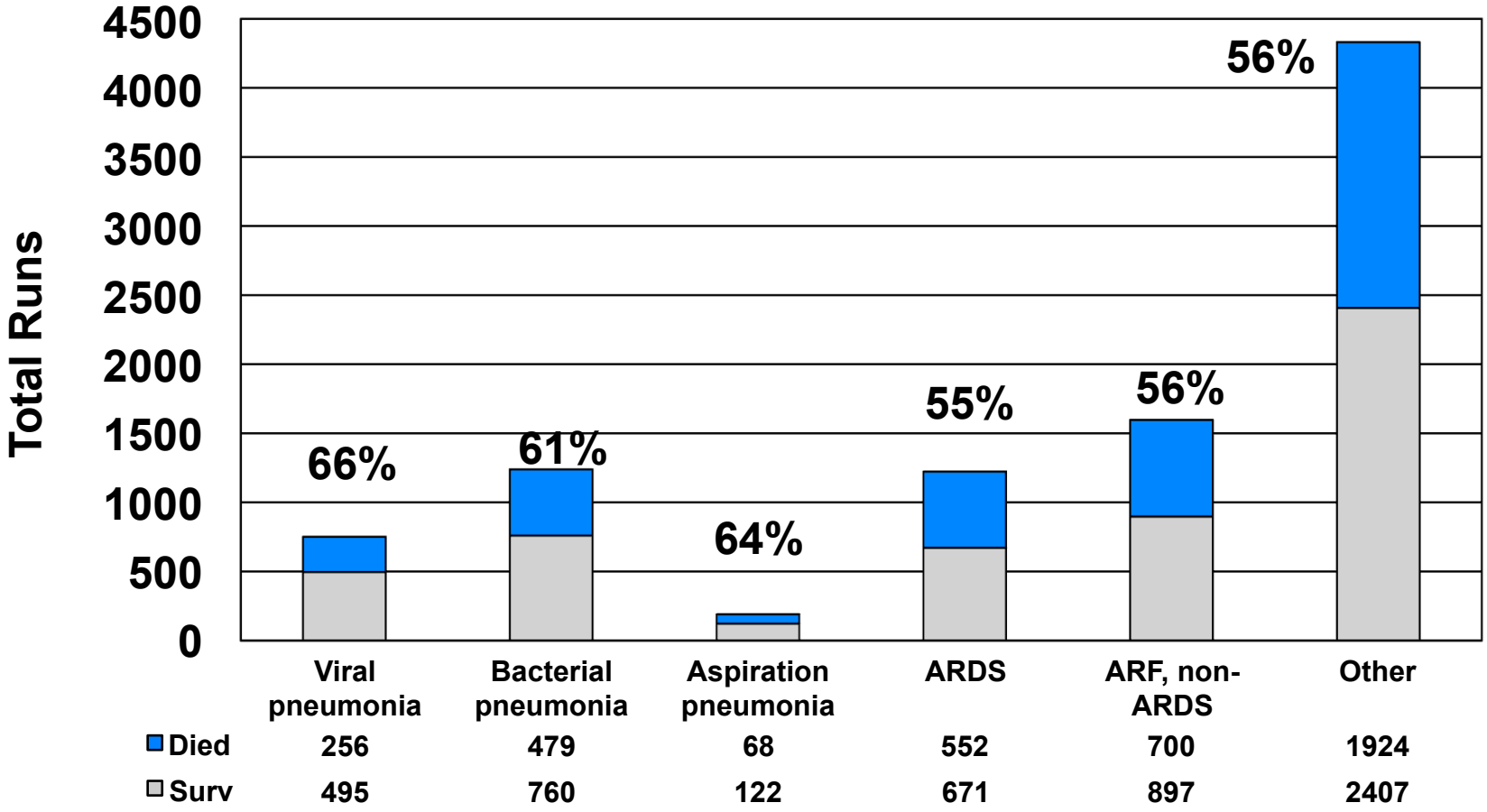


ELSO Registry January 2016

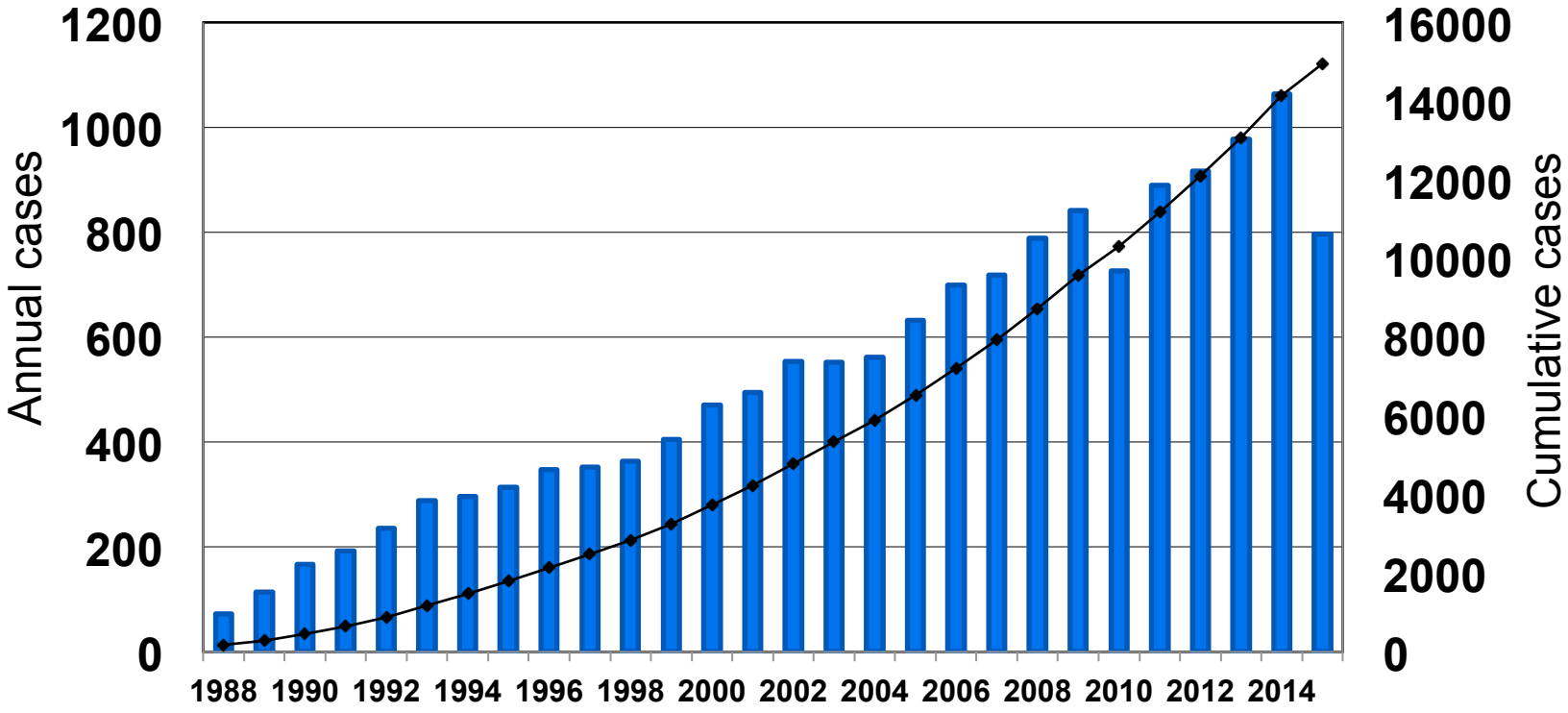
Adult Cases by Diagnosis

	Runs	*% Surv*
Viral Pneumonia	751	66
Bacterial Pneumonia	1,239	61
Aspiration	190	64
ARDS	1,223	55
Acute Resp Failure, Non-ARDS	1,597	56
Other	4,331	56

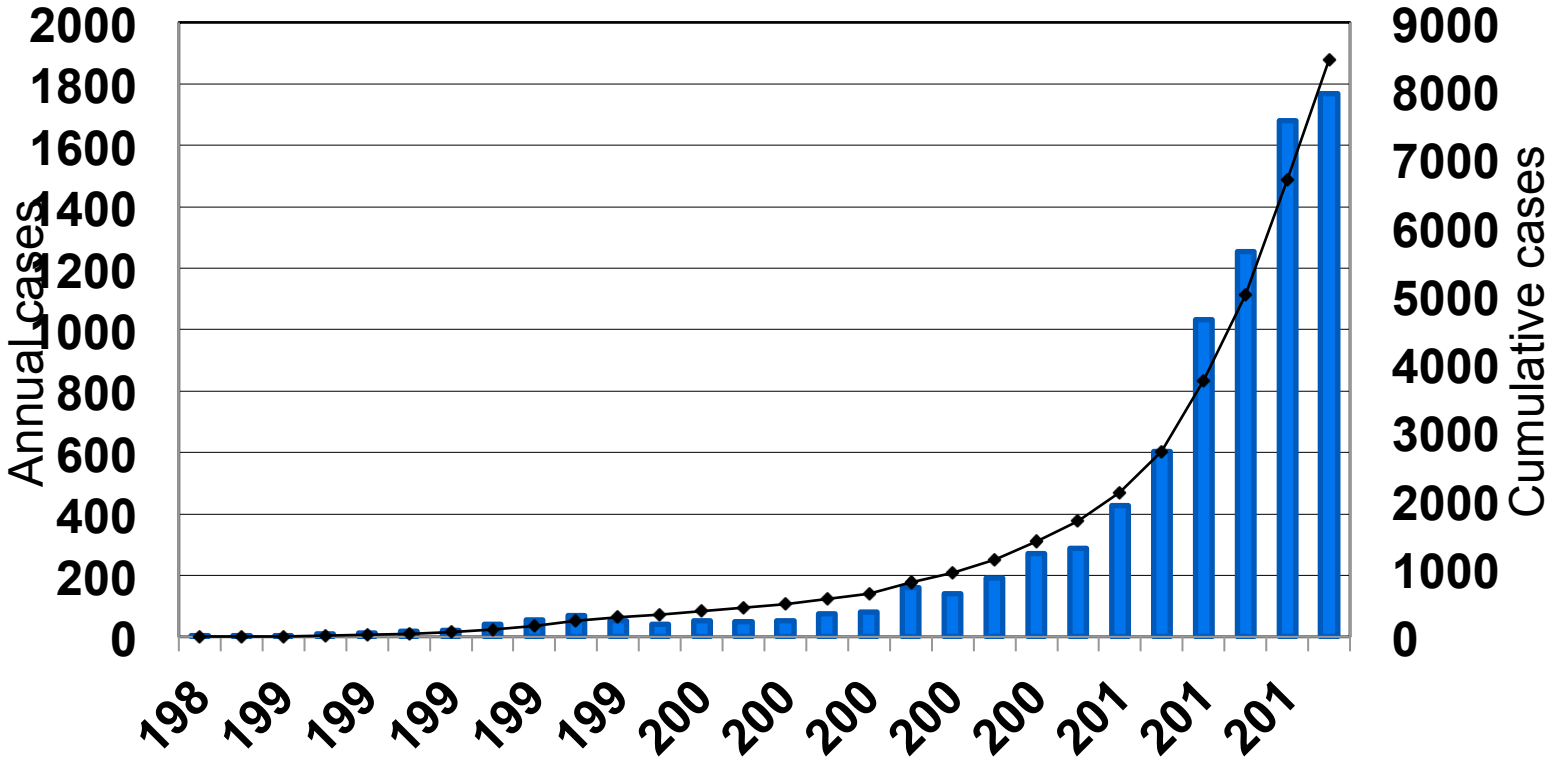
Adult Diagnoses and Survival



Cardiac Cases By Year
Under 16 years



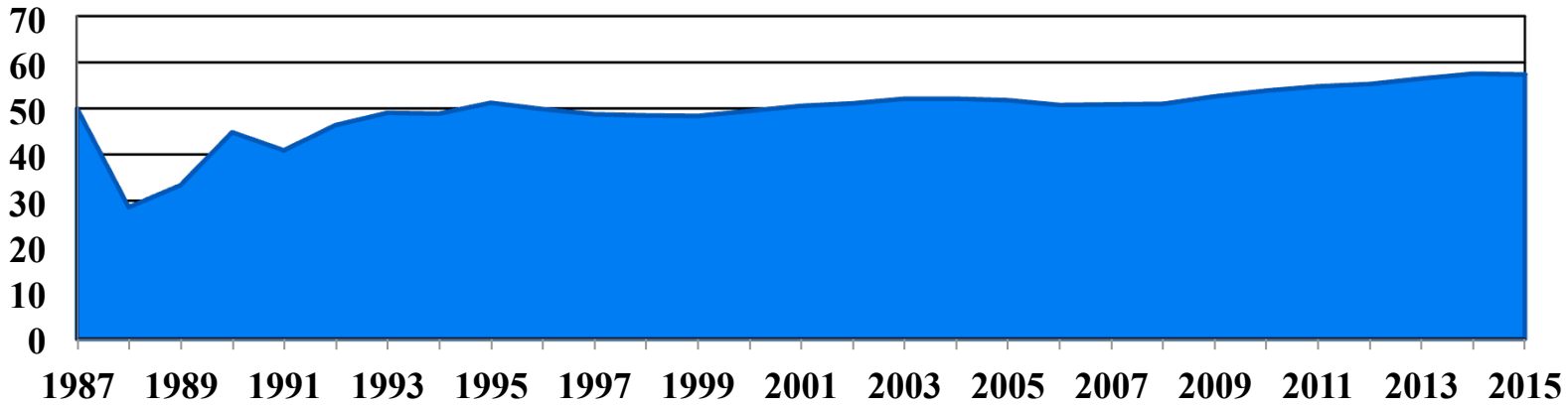
Cardiac Cases By Year
16 years old and over



Cardiac ECLS by Diagnosis
16 years old and over

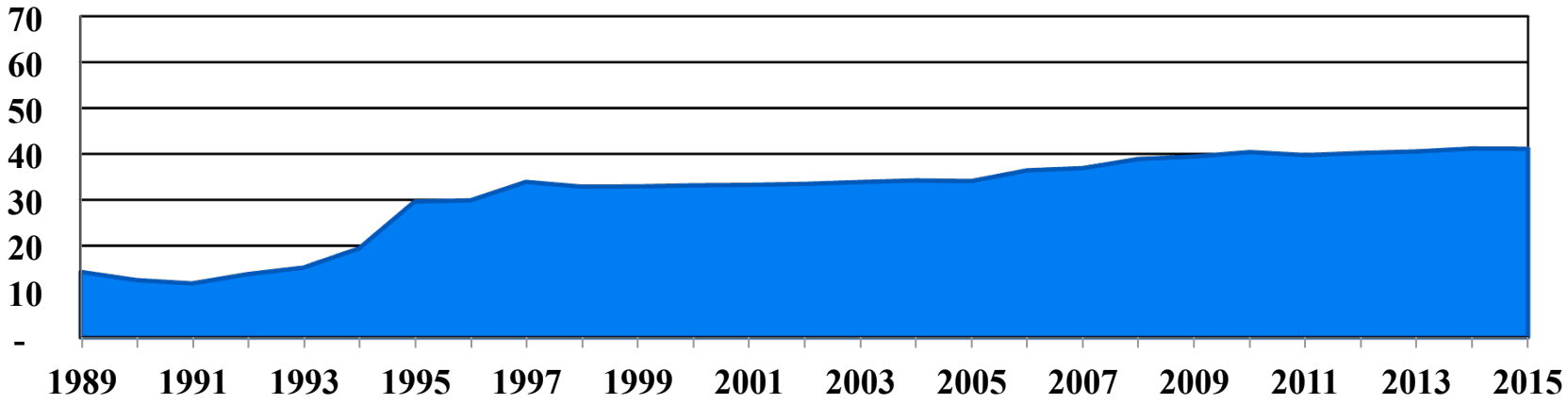
	Runs	*% Survived*
Congenital Defect	378	37
Cardiac Arrest	434	33
Cardiogenic Shock	1,717	42
Myocardiopathy	642	51
Myocarditis	207	62
Other	5,076	40

Cumulative Survival in Adult Respiratory Support



Cumulative Survival in Cardiac Support

16 years old and over



The ELSO Guidelines

- Update/Upgrade
- On elso.org
- Chair: Dr. Dan Brodie MD (Columbia)
- Approximate numbers of guidelines
  - Updated and posted: 20
  - In committee review process: 28
  - Proposed for development: > 50

ELSO GUIDELINES FOR ECMO CENTERS

ELSO Anticoagulation Guideline

ELSO Anticoagulation Guideline

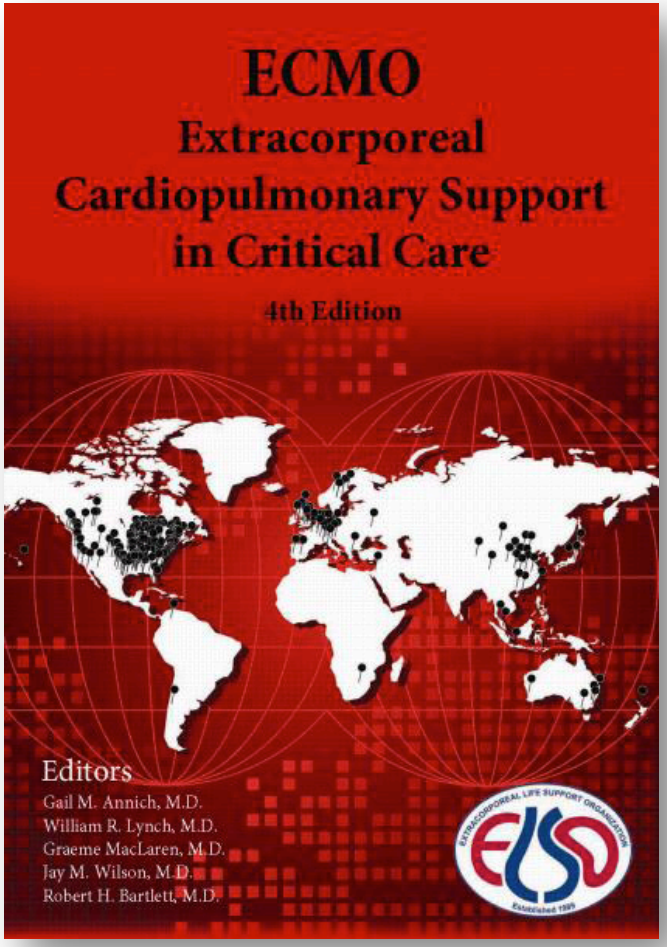
Table of Contents

- Guidelines ongoing
  - ECPR
  - Neurologic Assessment, Management & Follow-Up
  - Recommendation for FU Assessment
  - Ventilation Mode
  - VV-ECMO Management
  - Cannulation
  - And other 26

Extracorporeal Life Support Organization (ELSO)

General Guidelines for all ECLS Cases

Contents



- 5th Edition planning in progress
- Editorial Board
  - Tom Brogan (chief)
  - Laurance Lequier
  - Robert Lorusso
  - Graeme Maclaren
  - Giles Peek
- Format
  - Paper
  - E-book
  - Online
  - Subscription

STS/ELSO ECMO Symposium

STS/ELSO ECMO Symposium

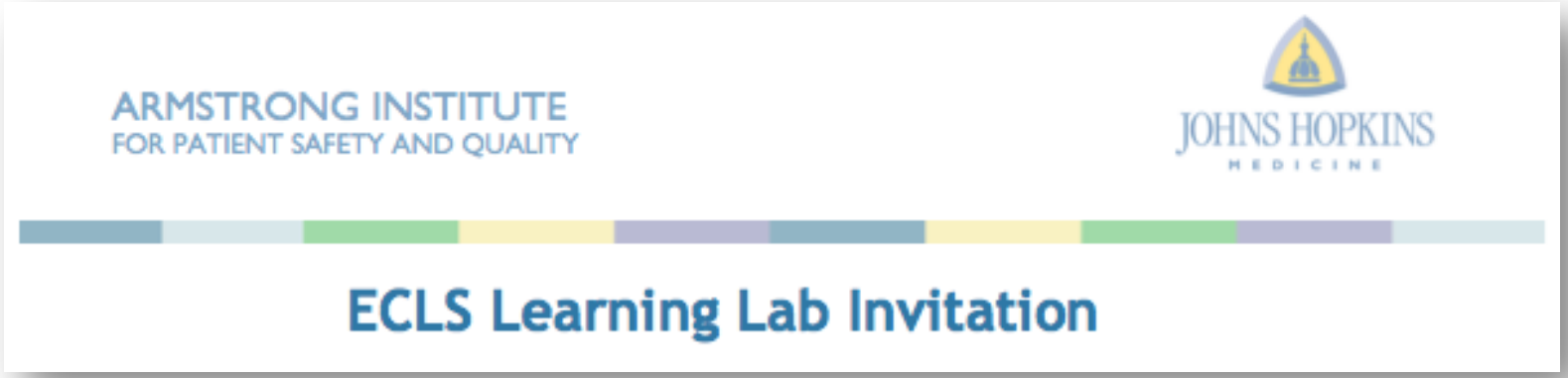
March 11-13, 2016
Tampa, Florida

More information coming soon!

Please fill out this form if you would like to be notified directly when registration opens.

Meeting Endorsed by Jonhs Hopkins/Yale

ELSO (and related Chapters) Meets Scientific Societies



Establishing Agreed Guidelines

Education and Training (Courses, Internal Assessment, COE)

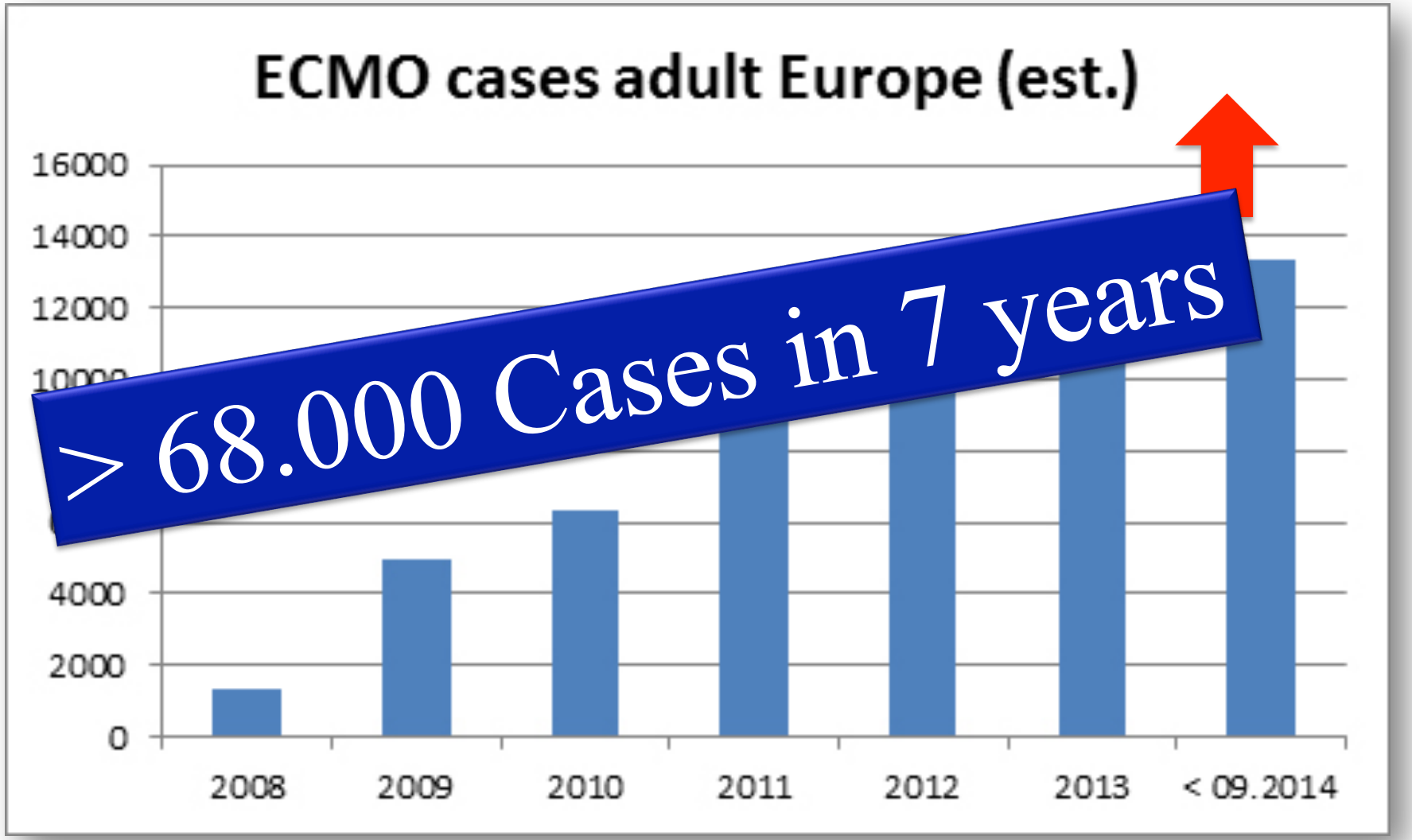
Joint Scientific Initiatives

Planning Euro-ELSO
Paris, June 2011

Euro-ELSO Steering Committee

Roberto Lorusso,	Maastricht, The Netherlands, Chair
Giles Peek,	Leicester (now NY City) UK, Past Chair
Bjorn Frenckner,	Stockholm, Sweden, Conference Chair
Matteo Di Nardo,	Rome, Italy
Justyna Swol,	Krochan, Germany
Alain Combes,	Paris, France
Carl Davis,	Glasgow, Scotland
Thomas Mueller,	Regensburg, Germany
Jan Belohlavek,	Prague, Cesz Republic
Leen Vercaemst,	Leuven, Belgium
Nicjolas Barret,	London, UK
Simon Finney,	London, UK
Margaret Farley,	Birmingham, UK
Chris Harvey	Leicester, UK
Jon Smith,	Newcastle, UK
Jim Fortenberry	Atlanta, US (ELSO Chair)
Peter Rycus	Ann Arbor, US (ELSO Secretary)

Maastricht UMC+
Heart+Vascular Center


ECMO cases adult Europe (est.)
16000
14000
12000
4000
2000
0
2008
2009
2010
2011
2012
2013
< 09.2014
> 68.000 Cases in 7 years

EuroELSO

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EUROELSO MAGAZINE

MISSION

EuroELSO is the European branch of the Extracorporeal Life Support Organization (ELSO) established in Ann Arbor, MI, USA in 1989. This website has the objective to join all the European health care professionals and scientists who are dedicated to the development and evaluation of novel therapies for support of failing organ systems with extracorporeal life support. EuroELSO also provides educational programs for active centers as well as for the broader medical and lay communities and provides support to institutions delivering extracorporeal life support through continuing education, sharing knowledge, updating on original research, publications.
The guiding principles of EuroELSO are the same of ELSO:

Innovation
Seeking to identify and promote advances for the application of extracorporeal therapies.

Expertise
Bringing together world leaders in the care of critically ill patients for collaboration to advance quality of care through education and publication.

Clinical support
Maintaining a comprehensive registry of data to assist in reducing morbidity and improving survival of patients requiring extracorporeal therapies.

Community
Fostering communication and collaboration among professionals who apply advanced technologies in the treatment of refractory organ failure.

EURO EXTRACORPOREAL LIFE SUPPORT ORGANIZATION ELSO Established 1989

EXTRACORPOREAL LIFE SUPPORT ORGANIZATION ELSO Established 1989

www.euroelso.net

Apple TV: a new "cheap" way for delivering live video simulations

ECMO for severe respiratory failure

ECCO2R: what's about an old idea with new techniques?

Please, Visit the Euro-ELSO Website for Any Information

EuroELSO WebMagazine

www.euroelso.net

EuroELSO ECMO Course: Adult ECMO for respiratory failure and septic chock

Sold-Out – Waiting List

Oct 5th – 8th 2015

At Karolinska University Hospital

Stockholm

ELSO/Euro-ELSO Partnership

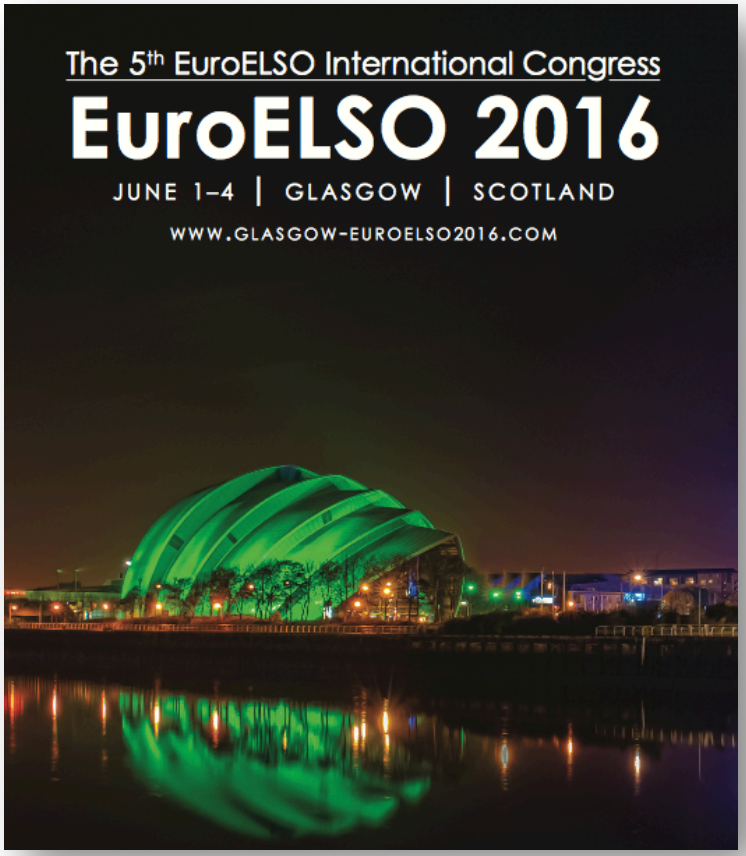
- Masterclasses & Courses (according to ELSO standards)
- On-Site Training & Multicentre Fellowship (period 1-3 months in 4-5 Euro-ELSO and or ELSO Centres)
- Simulation Products (low and high-fidelity)
- Scientific Initiatives (Trials, Studies, Position Papers, and others)

1. New Website & Webmagazine
2. Euro-ELSO @Social Networks
3. Euro-ELSO/ELSO Courses (visit the Website)
4. Surveys
5. Working Groups (visit the Website)
6. Research (3 Grants available, adult, pediatric, & basic science)
7. Increasing ELSO Visibility and Reputation
8. Increasing ELSO Chapter Collaboration

Maastricht UMC+
Heart+Vascular Center

A Big and Powerful Family

Look Forward to Seeing You at the 5th Euro-ELSO Annual Congress !



Conclusions

- ELSO and Chapters (particularly Euro-ELSO) are consistently growing (as ECMO)
- ELSO Registry expanding and precious help for clinical research (re-engineering in progress)
- New Guidelines are on the way
- New 5° Red Book Editions + Guidelines will be ready for mobile and app-related use
- Join ELSO/Euro-ELSO!.....the ECMO Family (new Individual Membership from January)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EuroELSO 2015 - 4th International Congress Extracorporeal support in respiratory and circu...
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Offer, Event +
What have you been up to?
Euro ELSO
Posted by Justyna Swol [?] · May 3 at 2:07pm ·
EuroELSO 2015 - 4th International Congress
Extracorporeal support in respiratory and circulatory failure
Regensburg, Germany, May 7 - 10, 2015
Extracorporeal Cardiopulmonary Support is a rapidly evolving technique in intensive care medicine, cardiothoracic surgery and cardiology worldwide. It